

The **mathastext** package

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The **mathastext** package changes the fonts which are used in math mode for letters, digits and a few other punctuation and symbol signs to replace them with the font as used for the document text. Thus, the package makes it possible to use a quite arbitrary font without worrying too much that it does not have specially designed accompanying math fonts. Also, **mathastext** provides a simple mechanism in order to use more than one math-as-text font in the same document.

``mathastext'` is a LaTeX package

```
\usepackage{mathastext}
```

The document will use in math mode the text font as configured at package loading time, for these characters:

```
abcdefghijklmnopqrstuvwxy  
ABCDEFGHIJKLMNPOQRSTUVWXYZ  
0123456789  
!?,.,;+ -= () [] /#%&<>|{-}
```

The command `\MTsetmathskips` allows to set up extra spacings around each given letter.

Use multiple `\Mathastext[name]`'s to define in the preamble various math versions using each a given text font, to be later activated in the document body via the command `\MTversion{name}`.

With the `subdued` option, `mathastext` will be active only inside such math versions distinct from the normal and bold.

Main options: `italic`, `frenchmath`, `defaultmathsizes`, `subdued`, `asterisk`, `LGRgreek`.

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1 What `mathastext` does

If you have used the package before please make sure to check first [section 4](#) where all changes across releases are recorded.

All blue colored words, such as `\Mathastext` or `italic`, are hyperlinked to their official descriptions located either in the [section 2](#) (Package commands) or [subsection 3.2](#) (Complete list of options).

1.1 Aim of this package and basic usage

The initial ideology of `mathastext` was to produce mathematical texts with a very uniform look, not separating math from text as strongly as is usually done.

`mathastext`'s basic aim is thus to have the same font for text and mathematics. With hundreds of free text fonts packaged for \LaTeX and only a handful of math ones, chances are your favorite text font does not mix so well with the available math ones; `mathastext` may then help. Note that `mathastext` was initially developed for the traditional \TeX fonts and engines, and that compatibility with Unicode engines and OpenType fonts is partial.

Here is a minimal example of what may go into the preamble:

```
\usepackage[T1]{fontenc}
\usepackage{times}
\usepackage[italic]{mathastext}
```

The package records which font is set up for text, at the time it is loaded, and then arranges things in order for this text font to be used in math mode as well. So, with the preamble as above all letters, digits, and punctuation signs inside math mode will then be typeset in Times.¹ The exact list of characters concerned by **mathastext** is a subset of the basic ASCII set:

<p style="text-align: center;">abcdefghijklmnopqrstuvwxy ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789 ! ? * , . : ; + - = () [] / # \$ % & < > { } and \</p>

As one can see, this is a very limited list! Some possibilities exist regarding Greek letters and will be described later.

1.2 Miscellanea

Please note that most of this section was written many years ago (except for the item about math alphabets which was enriched with important background information and moved upfront at 1.3zb). But it should still be valid!

math alphabets: Let us first recall fundamental facts of life, in the world of traditional PDF \TeX engine and \TeX fonts, as background for understanding what **mathastext** does in this context, which will be explained next. People familiar with using Unicode engines and **unicode-math**, please be aware that the semantics there of the \LaTeX math alphabet commands are **significantly** modified!

- In the default \LaTeX set-up all five of `\mathrm`, `\mathbf`, `\mathit`, `\mathsf` and `\mathtt` tell \TeX to use for their arguments specific OT1-encoded fonts,
- if the document body uses, as will be the case probably with any language other than English or its variants, some other encoding such as T1 for its fonts, there is no change whatsoever to the math configuration, indeed most font packages ignore it completely,

¹let's do as if we did not know the excellent **txfonts** package which employs Times for text and has a very complete math support, including many additional mathematical glyphs in comparison to the CM fonts. *This was written many years ago, nowadays, **newtx** is the successor of **txfonts**.*

- it is thus a priori wrong to think of these commands as switching to some body text font, although letters within their scopes will act as in a text font, and in particular obey ligatures (this also applies to operator names defined by `amsmath`'s `\DeclareMathOperator` which are, with some extras not mentioned here, as using `\mathrm`),
- these commands are completely different in spirit from the \LaTeX `\textrm`, `\textbf`, and others, which change only some font axis; indeed the math alphabet commands inherit from legacy Knuth's `\rm`, `\bf`, and others which are complete font specifiers,
- in particular when nesting, it is the inner-most which wins,
- only mathematical characters (such as letters) which are declared to \TeX as being of “variable family type” react to being in the argument of a math alphabet command,
- lowercase Greek letters are by default in \LaTeX immune to math alphabets (so `\mathrm{\pi}` induces no change in output), but the eleven uppercase Greek letters are of “variable family type” because they are picked in the OT1-encoded font also used for operator names (the one to which `\mathrm` maps), *and they occupy the exact same slots in the OML-encoding to which `\mathnormal` maps!* So in default \TeX , `\mathnormal{\Gamma}` gives a slanted one. The slots occupied in OML-encoding by the lowercase Greek letters (to which encoding they are a priori assigned) give completely unrelated glyphs in the OT1-encoding, so it makes sense that the default \LaTeX declares them to not react to math alphabets. Notice though, that if \LaTeX had declared a `\mathnormalbold`, mapping to a bold OML-encoded font, it would have made sense to also have `\alpha`, `\beta`, etc... be of “variable family type”,
- but of course then one should a priori never use `\mathbf{\pi}` for example, because the default `\mathbf` selects an OT1-encoded font, where there is no pi glyph whatsoever and in particular not at the slot of pi in the OML encoding (slot number 25)!

Please keep all the above in mind when trying to understand what `mathastext` does with math alphabets. The most significant point described next naturally is that `mathastext` will sync `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf` and `\mathtt` to map to the `mathastext`-ified body text fonts.

- `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf` and `\mathtt` are modified to use the `mathastext`-ified text fonts; this can be disabled via `defaultalphabets` and related individual options, but the package always provides `\Mathnormal`, `\Mathrm`, etc..., to match the `mathastext` font configuration (prior to 1.3za `defaultalphabets` and related options also caused the `mathastext` alphabet commands not to be defined).

changed:

(1.3za)

Recall that there may arise a “too many math alphabets” error if too many of these commands are *used* in the document: *declaring* them is not by itself the cause of the error. See the L^AT_EX news entry of its 2021-11-15 release for the counter `localmathalphabets` (with default value 2) which can be now be used if one hits such a difficulty.

- We define a new math alphabet command `\mathnormalbold` which gives direct access to the bold version of the `\mathnormal` alphabet (rather than using either the `\bm` command from the `bm` package or the `\boldsymbol` command from the `amsbsy` package). As it does not exist in the default L^AT_EX math font set-up, this alphabet is *not* subjected to the `subdued` option action.
- version 1.2 of `mathastext` has extended the scope of the math alphabets (1.2) to apply to non-alphabetical characters and to operator names. This respects the automatic white spaces added by T_EX around math symbols.
- The extra skips around letters (see subsection 1.8 and subsection 1.9) (1.3i) are removed in the scope of the math alphabets.
- Depending on options, further math alphabet commands are defined by the package: `\MathEulerBold`, `\MathEuler`, `\MathPSymbol`, and since 1.3x under the `LGRgreek` family of options also `\mathgreekup` and (1.3x) `\mathgreekit`. See subsection 1.7.3.
- Addition of `\mathgreekupbold` and `\mathgreekitbold` under the `LGR-greek` family of options. (1.3za)
- With the `LGRgreek+` option which enhances Greek letters with a specific behavior when in the arguments of the `\mathrm`, `\mathbf`, etc..., math alphabet commands, this special behavior is not triggered by the `\Mathrm`, `\Mathbf`, et al., which are genuine unmodified math alphabet commands. See subsection 1.7.5. (1.3za)

the en-dash as minus sign: very often the - character from the text font does not give a good minus sign. So by default, the package uses the en-dash sign –. Use `noendash` to deactivate it. Starting with version 1.12 of the package this ‘en-dash as minus’ should work in all encodings, including Unicode (if `fontspec` has been loaded); see also `unicodeminus` for OpenType fonts.

amsmath: the behaviour of the `\DeclareMathOperator` command of `amsmath` is modified by `mathastext` for it to use the correct font. Additionally, release 1.3n of `mathastext` at long last also handles an extra operation done by `amsmath` for `'./-*` to be used in operator names without the extra math spacing.² This customization is suppressed in `subdued` mode for the `normal` and `bold` math versions. (1.3n)

²To the experts: there is a long story here that `\newmcodes@` hardcodes the font, that it was not compatible with Unicode engines, that during some time (2013-2016) `lualatex-math` fixed that and very recently `amsopn.sty` 2016/03/08 v2.02 also, so now `lualatex-math` 1.6 does nothing

hbar: the default L^AT_EX definition of `\hbar` would in our context make use of the `h` of the current math font (so for us, it is also the text font, perhaps in italic shape), but with a bar across the `h` from the original default math font for letters (usually `cmmi`). We redefine `\hbar` to use the text font macron accent (`\=`) as a mock math accent (this takes into account the `italic` option and is compatible with subscripts and superscripts).

Since 1.12 `mathastext` when dealing with a Unicode font sets the `\hbar` to be the character from the font having hexadecimal codepoint U+0127.

Since 1.3u the general 8bits font encoding is supported (see discussion of the `mathaccents` option at end of this list for the shared limitations). Brief testing with various usual T_EX fonts shows that the vertical positioning of the bar isn't satisfying. It is planned to either add a parameter to adjust it or to modify altogether the mode of construction of the `\hbar`. (1.3u)

Use `nohbar` to tell `mathastext` not do provide its own `\hbar`.

dotless i and j: by default the package redefines `\imath` and `\jmath` to give (in math mode) the dotless `i` and `j` (if it exists at all) from the text font.³

asterisk: versions of `mathastext` earlier than 1.2d [2013/01/02] did not do anything with the `\ast` control sequence but did pick the asterisk `*` in the document text font, and this often was a rather silly thing as the text asterisk is generally in a raised position. Furthermore, the `*` lost its status of a binary operator and was treated as an 'ordinary' symbol. An option `noasterisk` turned this feature off. Starting with 1.2d, the `noasterisk` option is deprecated and the new default is to do nothing. But when option `asterisk` is received by the package, then both `\ast` and `*` are simultaneously modified to use (as binary operators) the text asterisk, slightly lowered. The amount of lowering⁴ is decided by the mandatory argument to the command `\MTlowerast{<dimen>}`. The package initially does `\MTlowerast{.3\height}`. Doing `\MTlowerast{.5ex}` is not a good idea as it does not scale properly in the script and scriptscript styles. With an argument given as a multiple of `\height`, the asterisk will behave as expected in subscripts and subscripts of subscripts. But `*` is now 'mathematically active'⁵ and `\mathbb{R}^*` or `\mathbb{R}^{\ast}` *must* be input as `\mathbb{R}^{\ast}` and `\mathbb{R}^{\ast}`. Furthermore, they will obey the math alphabet commands.

as it is already fixed "upstream" in `amsopn.sty`, but anyhow in both cases, this still hardcoded the font, so finally `mathastext` does the right thing from its point of view. See the code comments for more, there is an issue here with Lua^LT_EX not applying the curly right quote contrarily to X_YL^AT_EX.

³Since 1.12 it also redefined `\i` and `\j` for usability both in text and math modes, but this has been dropped at 1.3t. Breaking change! (1.3t)

⁴with the option `symbolmisc`, the asterisk is picked from the Symbol font, and the amount of lowering is non-customizable; however if a math alphabet command is used, the asterisk is then again from a text font and the lowering will be as specified by `\MTlowerast`.

⁵in a hopefully safe way, for example `\label{eq*1}` is ok.

X_YTeX and Lua^ATeX: regarding the en-dash and the dotless i and j, the package is now under the Unicode engines compatible not only with the “Unicode” L^AT_EX font encodings EU1 (X_YTeX, old fontspec), EU2 (LuaL^ATeX, old fontspec), TU (X_YTeX and LuaL^ATeX, modern fontspec), but also with traditional 8bits-encodings declared as a `fontenc` option. (1.3u)

fontspec: one more note to users of X_YTeX/LuaL^ATeX with `fontspec`:
it has to be loaded with the option `no-math`, and *before* `mathastext`.

vec accent: The default `\vec` accent is not appropriate for upright letters, so `mathastext` provides a `\fouriervec` which takes its glyph in a Fourier font, and an Ersatz `\pmvec` which is reasonably good looking on upright letters and works with the `\rightarrow` glyph. Contrarily to version 1.0, the default `\vec` is not overwritten with `\fouriervec`. And contrarily to version 1.1, one now needs to pass the option `fouriervec` to have the math accent `\fouriervec` defined by the package.⁶

math accents: if option `mathaccents` is used then `mathastext` attempts to let the math accents `\acute`, `\grave`, etc... use the suitable glyphs from the text font. Prior to 1.3u only OT1, T1, and LY1 were supported (via hardcoded slots). It should now work with any 8bits font encoding having been declared as an option to the `fontenc` package (and of course providing the ten needed text accents which will mock math accents).⁷ (1.3u)

The `\vec` math accent is not handled here, as it is not available in the usual 8bits font encodings. See the `fouriervec` option or the `\pmvec` command.

The math accents obey the `subdued` option and will change in sync with the `mathastext`-ified text font used in each non subdued math version. (1.3u)

(Very) brief testing during 1.3u development with X_YTeX and LuaTeX let the author conclude that usage with the `\Umathaccent` primitive of an OpenType accent glyph slot (which in the text font is for usage as a postpended combining character) gives definitely bad horizontal placements for both engines (each in its own way). Thus, the redefinitions of accents for a `mathastext` declared math version with an OpenType font is by default canceled.⁸ Use `unimathaccents` to force usage of the OpenType font text accents glyph slots with the `\Umathaccent` primitive. Expert users are invited to check out the code and to contribute suggestions if some extras can improve it.

⁶this costs a math family, as I never came back to this to try to do otherwise.

⁷The code will raise low-level T_EX errors if the user attempts to use an 8bits font encoding whose L^AT_EX definition file is lacking the suitable uses of `\DeclareTextAccent` or if the low level L^AT_EX macro implementation of text accents changes significantly; in such cases please report the problem to the author, so that it can be documented in future releases!

⁸I.e., the `\grave` etc... control sequences will, in math versions with an OpenType `mathastext`-ified font, expand to macros holding their initial meanings, unmodified by `mathastext`, which was in force at the `\begin{document}`.

varying font encodings: the very first release of `mathastext` dealt with only one font; very soon thereafter it acquired the capacity to define multiple math versions, each one using its own text font. But, as was documented at this location formerly, various encoding dependent decisions were done once and for all during package loading.

This meant in particular that the minus sign (using the text endash), the dotless i and j, the `\hbar`, the math accents were all set up for only one unique font encoding. It was thus recommended that all math versions share the same font encoding.

The 1.3u release has lifted this restriction.

(1.3u)

1.3 Examples

Here is another simple example:

```
\usepackage{libertinus-type1}
\usepackage[italic,LGRgreek,defaultmathsizes]{mathastext}
```

The `LGRgreek` option is there to take advantage that the `libertinus-type1` package⁹ also provides Greek letters in LGR encoding, which can thus be used by `mathastext` in math mode. And we do here as if we did not know about the existence of the `libertinust1math` package!¹⁰ This would have been the obvious choice, but then one wouldn't need `mathastext` and I couldn't even start this documentation.

More sophisticated preambles will use multiple times the `\Mathastext` command in the preamble with its optional argument [*math_version*] in order to define *math versions* corresponding to a given font configuration. These `mathastext`-enriched math versions are then activated in the document body via the `\MTversion{math_version}` command, which modifies *both* the text font and the math font.

We now give some examples with a verbatim copy of the preamble code corresponding to them, as can be found in the source of this documentation. The detailed option and command descriptions will be given later.

First of all, the package was loaded using this:

```
\usepackage[subdued,%
             asterisk,%
             defaultmathsizes,%
             symbolmisc,symbolre,%
             LGRgreek]{mathastext}
```

⁹Bob TENNENT, *Support for using Libertinus fonts with L^AT_EX/pdfL^AT_EX*, <https://ctan.org/pkg/libertinus-type1>.

¹⁰Michael SHARPE, *A Type 1 font and L^AT_EX support for Libertinus Math*, <https://ctan.org/pkg/libertinust1math>.

In the definitions of the `mathastext`-enriched *math versions* we keep commands which may have been redundant in the original preamble, because they were issued earlier for a previous math version definition.

Let's start with Latin Modern typewriter proportional. Its usage was configured in the preamble using this:

```
\MTlettershape{n}
\MTupgreek
\MTgreekfont{cmtt}
\MTfamily{lmvtt}
\Mathastext[lmvtt]
```

Its usage is triggered using

```
\MTversion{lmvtt}
```

in the document. Here is an example:

Let (X, Y) be two functions of a variable a . If they obey the differential system $(VI_{\nu, n})$:

$$\begin{aligned} a \frac{d}{da} X &= \nu X - (1 - X^2) \frac{2na}{1 - a^2} \frac{aX + Y}{1 + aXY} \\ a \frac{d}{da} Y &= -(\nu + 1)Y + (1 - Y^2) \frac{2na}{1 - a^2} \frac{X + aY}{1 + aXY} \end{aligned}$$

then the quantity $q = a \frac{aX + Y}{X + aY}$ satisfies as function of $b = a^2$ the P_{VI} differential equation:

$$\begin{aligned} \frac{d^2 q}{db^2} &= \frac{1}{2} \left\{ \frac{1}{q} + \frac{1}{q-1} + \frac{1}{q-b} \right\} \left(\frac{dq}{db} \right)^2 - \left\{ \frac{1}{b} + \frac{1}{b-1} + \frac{1}{q-b} \right\} \frac{dq}{db} \\ &+ \frac{q(q-1)(q-b)}{b^2(b-1)^2} \left\{ \alpha + \frac{\beta b}{q^2} + \frac{\gamma(b-1)}{(q-1)^2} + \frac{\delta b(b-1)}{(q-b)^2} \right\} \end{aligned}$$

with parameters $(\alpha, \beta, \gamma, \delta) = \left(\frac{(\nu+n)^2}{2}, \frac{-(\nu+n+1)^2}{2}, \frac{n^2}{2}, \frac{1-n^2}{2} \right)$.

Test of uppercase Greek in math: $AB\Gamma\Delta\Xi\Omega$.

Both the Latin and Greek letters are upright, in conformity to the way the `lmvtt` version was defined.

Now with the fonts from the `libertinus-type1` distribution¹¹. The preamble code is:

```
\MTfamily{LibertinusSerif-TLF}
\MTlettershape{n}
\MTseries{m}
\MTgreekfont{LibertinusSerif-TLF}
\MTupgreek
\Mathastext[libertinus]
\MTseries{sb}
\Mathastext[libertinussemibold]
```

¹¹Bob TENNENT, *Support for using Libertinus fonts with L^AT_EX/pdfL^AT_EX*, <https://ctan.org/pkg/libertinus-type1>.

Its usage in the document body for the example below is triggered via

`\MTversion[libertinus]{libertinussemibold}`

This syntax modifies the text fonts to be those which were defined to hold for the **mathastext**-math version passed as optional argument, and sets the math fonts according to the mandatory argument. Hence the math mode uses semibold font but the text font uses the normal weight.

Let (X, Y) be two functions of a variable a . If they obey the differential system $(VI_{v,n})$:

$$\begin{aligned} a \frac{d}{da} X &= vX - (1 - X^2) \frac{2na}{1 - a^2} \frac{aX + Y}{1 + aXY} \\ a \frac{d}{da} Y &= -(v + 1)Y + (1 - Y^2) \frac{2na}{1 - a^2} \frac{X + aY}{1 + aXY} \end{aligned}$$

then the quantity $q = a \frac{aX+Y}{X+aY}$ satisfies as function of $b = a^2$ the P_{VI} differential equation:

$$\begin{aligned} \frac{d^2 q}{db^2} &= \frac{1}{2} \left\{ \frac{1}{q} + \frac{1}{q-1} + \frac{1}{q-b} \right\} \left(\frac{dq}{db} \right)^2 - \left\{ \frac{1}{b} + \frac{1}{b-1} + \frac{1}{q-b} \right\} \frac{dq}{db} \\ &\quad + \frac{q(q-1)(q-b)}{b^2(b-1)^2} \left\{ \alpha + \frac{\beta b}{q^2} + \frac{\gamma(b-1)}{(q-1)^2} + \frac{\delta b(b-1)}{(q-b)^2} \right\} \end{aligned}$$

with parameters $(\alpha, \beta, \gamma, \delta) = \left(\frac{(v+n)^2}{2}, \frac{-(v+n+1)^2}{2}, \frac{n^2}{2}, \frac{1-n^2}{2} \right)$.

Test of uppercase Greek in math: $\text{AB}\Gamma\Delta\Xi\Omega$.

Now with a Times clone. We will configure Latin letters to be in italic shape, and Greek letters to be italic for lowercase and upright for uppercase:

```
\usepackage{times}% it modifies the \{rm,sf,tt\}default's
\MTfamily{\rmdefault}
\MTlettershape{it}
\MTseries{m}
\MTgreekfont{txr}
\MTitgreek\MTupGreek
\Mathastext[times]
% \MTversion{times} will change not only math but also text, so it
% will re-enact the \rmdefault, \sfdefault, \ttdefault from loading times.sty
```

We now use this in the document body via

`\MTversion{times}`

Let (X, Y) be two functions of a variable a . If they obey the differential system $(VI_{v,n})$:

$$\begin{aligned} a \frac{d}{da} X &= vX - (1 - X^2) \frac{2na}{1 - a^2} \frac{aX + Y}{1 + aXY} \\ a \frac{d}{da} Y &= -(v + 1)Y + (1 - Y^2) \frac{2na}{1 - a^2} \frac{X + aY}{1 + aXY} \end{aligned}$$

then the quantity $q = a \frac{aX+Y}{X+aY}$ satisfies as function of $b = a^2$ the P_{VI} differential equation:

$$\frac{d^2q}{db^2} = \frac{1}{2} \left\{ \frac{1}{q} + \frac{1}{q-1} + \frac{1}{q-b} \right\} \left(\frac{dq}{db} \right)^2 - \left\{ \frac{1}{b} + \frac{1}{b-1} + \frac{1}{q-b} \right\} \frac{dq}{db} + \frac{q(q-1)(q-b)}{b^2(b-1)^2} \left\{ \alpha + \frac{\beta b}{q^2} + \frac{\gamma(b-1)}{(q-1)^2} + \frac{\delta b(b-1)}{(q-b)^2} \right\}$$

with parameters $(\alpha, \beta, \gamma, \delta) = \left(\frac{(v+n)^2}{2}, \frac{-(v+n+1)^2}{2}, \frac{n^2}{2}, \frac{1-n^2}{2} \right)$.

Test of uppercase Greek in math: $\text{AB}\Gamma\Delta\Xi\Omega$.

Let us be a bit more original and have our mathematics with italic letters from the sans serif font Helvetica, while the letters in text use New Century Schoolbook. Also we want Greek letters (both lowercase and uppercase) to be in italic shape. The preamble code was:

```
\usepackage{newcent}% attention that it modifies all three of \rmdefault,
% \sfdefault and \ttdefault
\MTfamily{\rmdefault}
\MTlettershape{it}
% \MTitgreek\MTupgreek % our demo does not use newcent for math anyway
\Mathastext[newcent]

\usepackage[scaled]{helvet}
\MTfamily{\sfdefault}
\MTlettershape{it} % redundant here
\MTseries{m}
\MTitgreek % make both lowercase and uppercase Greek italic
\MTgreekfont{cmss}
\Mathastext[helvet]
```

And the next demo is configured in the document body via

```
\MTversion[newcent]{helvet}
```

Let (X, Y) be two functions of a variable a . If they obey the differential system $(V_{v,n})$:

$$a \frac{d}{da} X = vX - (1 - X^2) \frac{2na}{1 - a^2} \frac{aX + Y}{1 + aXY}$$

$$a \frac{d}{da} Y = -(v+1)Y + (1 - Y^2) \frac{2na}{1 - a^2} \frac{X + aY}{1 + aXY}$$

then the quantity $q = a \frac{aX+Y}{X+aY}$ satisfies as function of $b = a^2$ the P_{VI} differential equation:

$$\frac{d^2q}{db^2} = \frac{1}{2} \left\{ \frac{1}{q} + \frac{1}{q-1} + \frac{1}{q-b} \right\} \left(\frac{dq}{db} \right)^2 - \left\{ \frac{1}{b} + \frac{1}{b-1} + \frac{1}{q-b} \right\} \frac{dq}{db} + \frac{q(q-1)(q-b)}{b^2(b-1)^2} \left\{ \alpha + \frac{\beta b}{q^2} + \frac{\gamma(b-1)}{(q-1)^2} + \frac{\delta b(b-1)}{(q-b)^2} \right\}$$

with parameters $(\alpha, \beta, \gamma, \delta) = (\frac{(\nu+n)^2}{2}, \frac{-(\nu+n+1)^2}{2}, \frac{n^2}{2}, \frac{1-n^2}{2})$.

Test of uppercase Greek in math: $AB\Gamma\Delta\Xi\Omega$.

And after all that, we may wish to return to the default math typesetting (let's shorten the extract here in case the reader makes an indigestion ...). This is easy because all previous usages were enclosed in braces $\{\dots\}$ so as to limit the scope. As `mathastext` was loaded with option `subdued` the default rendering (i.e. in the *normal* and *bold* math versions) is (almost) as if the package was not loaded at all, and it simply matches the document font configuration. Here it thus matches the

`\usepackage{mlmodern}`

which was included in the document preamble prior to loading `mathastext`.

Let (X, Y) be two functions of a variable a . If they obey the differential system $(VI_{\nu, n})$:

$$\begin{aligned} a \frac{d}{da} X &= \nu X - (1 - X^2) \frac{2na}{1 - a^2} \frac{aX + Y}{1 + aXY} \\ a \frac{d}{da} Y &= -(\nu + 1)Y + (1 - Y^2) \frac{2na}{1 - a^2} \frac{X + aY}{1 + aXY} \end{aligned}$$

then the quantity $q = a \frac{aX+Y}{X+aY}$ satisfies as function of $b = a^2$ the P_{VI} differential equation with parameters $(\alpha, \beta, \gamma, \delta) = (\frac{(\nu+n)^2}{2}, \frac{-(\nu+n+1)^2}{2}, \frac{n^2}{2}, \frac{1-n^2}{2})$.

Test of uppercase Greek in math: $\Gamma\Delta\Xi\Omega$ (no `\Alpha`, no `\Beta`).

If the scope of our earlier examples using `mathastext`-enriched math versions had not been limited we would have issued

`\MTversion{normal}`

to return to the normal (almost not influenced by `mathastext`) math version.

The Greek letters varied across our examples thanks to the `LGRgreek` option which made the `\MTgreekfont` command active for configuration of the math versions.¹²

*Since 1.3x this documentation uses globally the `mlmodern`¹³ font package and has added an example using the *Libertinus* font in type-1 format¹⁴ although there is an existing accompanying math font¹⁵.*

¹²The document used the `cmmt`, `cmss`, `txr`, as well as `LibertinusSerif-TLF` font families in LGR encoding. The first two are available (with no need to load explicitly any package in the document) if the \LaTeX installation provides the `cbfonts` (or `cbgreek-complete`) & `babel` packages, and the LGR encoded `txr` font (again no package loading is necessary) is part of the files of the `txfontsb` package. For `LibertinusSerif-TLF`, the files of the `libertinus-type1` package must be present.

¹³Daniel Benjamin MILLER, *A blacker Type 1 version of Computer Modern, with multilingual support*, <https://ctan.org/pkg/mlmodern>. I have added to the preamble

`\DeclareEncodingSubset{TS1}{mlmmtt}{0}`

to circumvent some \LaTeX complaints about `\textasciigrave` (this is a widespread problem when not using default fonts) related to occurrences of the backtick character in verbatim displays.

¹⁴Bob TENNENT, *Support for using Libertinus fonts with \LaTeX /pdf \LaTeX* , <https://ctan.org/pkg/libertinus-type1>.

¹⁵Michael SHARPE, *A Type 1 font and \LaTeX support for Libertinus Math*,

1.4 Main options

1.4.1 The `italic` option

In the initial version 1.0, the Latin letters in mathematical mode assumed the exact same shape as in text mode, and this meant, generally speaking, that they would turn up upright. Doing this gives a very uniform look to the document, so that one has to make an effort and read it with attention, and this was one of the design goals of `mathastext`.

Nevertheless, soon after I posted the initial version of the package to CTAN, I was overwhelmed by numerous¹⁶ questions¹⁷ on how to have the letters be in italic shape.

The default is still, as in version 1.0, for everything to be in upright shape, but it suffices to pass to the package the option `italic` to let the Latin letters in math mode be in italic shape.¹⁸ (1.1)

1.4.2 The `frenchmath` option

It is a variant of the `italic` option which keeps the uppercase Latin letters in upright shape¹⁹. Also lets the Greek letters, if the latter are under `mathastext` influence, be all upright, lowercase as uppercase.

1.4.3 The `defaultmathsizes` option

The default sizes give for subscripts of subscripts barely legible glyphs (author's opinion!). So `mathastext` makes more reasonable choices. It also redefines `\Huge` and defines a `\HUGE` size, copied from the `moresize` package. To cancel all of this use option `defaultmathsizes`.

1.4.4 The `subdued` option

This option was introduced in v1.15. It provides a manner to switch on the `mathastext-ification` only for limited portions of the document, with the help of the mechanism of math versions. Without the `subdued` option, the `mathastextification` applies by default to the whole of the document (and one may also define additional math versions in the preamble); with the `subdued` option the `mathastextification` is done only in *math versions* distinct from the standard and bold ones. (1.15)

Despite some limitations I will now partially describe, the `subdued` option has its utility, as I think is illustrated enough by the examples given at the start of this document and it works reasonably well.

<https://ctan.org/pkg/libertinust1math>. Note that it is then highly advantageous to use `latex+dvipdfmx` and not `pdflatex` for reasons of PDF file size.

¹⁶this means "more than one."

¹⁷I thank in particular Tariq PERWEZ and Kevin KLEMENT for their kind remarks (chronological order).

¹⁸more precisely stated, the value of `\itdefault` is used.

¹⁹more precisely stated, the value of `\shapedefault` is used.

`mathastext` was not written initially in order to allow its action to be completely canceled. It does not store (all) mathcodes nor does it set them (all) when changing math versions; only that would allow a perfect subdued mode (and L^AT_EX is rather obstinate in making that tricky or at least uneasy if sticking to its official interface to math mode, as it is almost entirely preamble only).

Releases 1.3t and 1.3u do this kind of things to maintain usability across multiple `mathastext`-ified math versions of characters which are obviously font encoding dependent such as the minus sign as en-dash (or unicode minus), the dotless i, the `\hbar`, the text accents.

But this should be extended to all `mathastext`-ified characters which basically would amount to an extensive rewrite of large legacy portions of the code. Currently the support for the subdued mode and to multiple math versions amounts to some kind of a kludge, added to an initial design which handled a single unique text font.

To get the displayed math (almost) as if `mathastext` had not been loaded, one must also use the option `defaultmathsizes`. But this does not quite suffice, as, for example, the colon, the dot, and the minus sign belong in the default L^AT_EX math mode set-up to three distinct fonts whereas `mathastext` will pick (even subdued) the three of them in the same font,²⁰ and although it will make a reasonable choice of this font, this is not an exact re-installment of the previously prevailing situation. And then other packages could have done arbitrary things regarding character mathcodes, so to be on the safe side one needs the `basic` option which limits the mathastextification to letters and digits.^{21 22 23} Even then, in some circumstances, this may not suffice: for example the `euler` package declares the digits to be picked from the same font as the Latin letters, but the subdued `mathastext` “normal” math version will pick them from the same font as used for operator names, which here with the `euler` package is the document body default text font.

The `frenchmath` option effect applies *also* to the subdued “normal” and “bold” math versions.

²⁰The minus sign is now perfectly subdued, because its original mathcode is stored and restored; this was only way to handle the case with Unicode engines where the math operator font is in a classic T_EX encoding, but the minus sign is configured by `mathastext` to use a Unicode en-dash or minus character in non-subdued math versions. (1.3t)

²¹The `subdued` mode does extinguish in the normal and bold math versions the action of options `selfgreek`, `eulergreek`, and `symbolgreek` (previously only `LGRgreek` was subdue-able). (1.3d)

²²The `\imath` and `\jmath` now obey the subdued regime. (1.3t)

²³Also `\hbar` and the math accents (see `mathaccents` option) obey the subdued regime. (1.3u)

1.4.5 The `LGRgreek` option

There is the issue of Greek letters. Sometimes the text font has Greek glyphs, in LGR encoding²⁴ (this should be mentioned in the documentation of the font package). Then option `LGRgreek` tells `mathastext` to pick up these Greek letters.

It is naturally possible to leave the responsibility to set up Greek letters to some other packages loaded previously to `mathastext`. And even if `mathastext` has been loaded with one of its Greek related options the command `\MTstandardgreek` will locally cancel its customization of Greek letters. The command `\MTcustomgreek` reenables the customization done by `mathastext`, if it was loaded with the `LGRgreek` or one of the other Greek related options.

Release 1.3x has added important new aspects to the handling of Greek letters via the `LGRgreek` option. Make sure to read the [subsubsection 1.7.3](#).

1.5 More miscellanea

This may repeat information already given.

1.5.1 Avoid OT1 encoding

We specified in our minimal working example a T1 encoding (LY1 would have been ok, too) because the default OT1 does not have the `<>|{} \` glyphs. If `mathastext` detects OT1 as the default encoding it will leave these characters to their defaults from the math fonts.²⁵

If `mathastext` detects the obsolete OT1 encoding it does not do anything with `<, >, |, {, and }` which (except for monospace fonts) are not available in that encoding. To fully benefit from `mathastext` it is recommended to use some other encoding having these glyphs such as T1 or LY1.

1.5.2 Derivative, minus, asterisk

The text characters `'` and `-` are not used, and the asterisk is done optionally:

²⁴For example the default CM and its replacement Latin Modern for european languages are (transparently to the user) extended with LGR encoded fonts from the `cbfonts` (`cbgreek-complete`) \TeX Live package.

²⁵the `subdued` option, described next, acts a bit otherwise, it forces, contrarily to its usual low-key character, the replacement of OT1 by T1 for the fonts ultimately used with letters and digits in math mode.

- the derivative sign ' is left to its default as the text font glyph ' is not, as a rule, a satisfying alternative.²⁶
- for the minus sign `mathastext` uses the endash character –, if available, and not the hyphen character -.²⁷
- the `asterisk` option is mandatory for `mathastext` to replace the binary math operator * (and the equivalent control sequence `\ast`) with a version which uses the text asterisk * suitably lowered²⁸ (and with the correct spaces around it as binary operator). The reason is that after this inputs such as $\mathbb{R}^*\mathbb{R}$ or $\mathbb{R}^{\ast}\mathbb{R}$ raise errors and *must* be written $\mathbb{R}^{\ast}\mathbb{R}$ or $\mathbb{R}^{\ast}\mathbb{R}$.

Nothing is changed to the “large” math symbols, except for \prod and \sum in inline math which, like here: $\prod \sum$, will be taken from the Symbol Font if option `symbol-misc` was used.

The left and right delimiters are taken from the text font only for the base size: any `\big`, `\bigl`, `\bigr`, etc. . . reverts to the original math symbols.

1.5.3 Load `mathastext` always last

The “large” math symbols are not modified in any way by `mathastext`. Only loading some math font packages such as `fourier`, `kpfonts`, `mathabx`, `mathdesign`, `txfonts`, `newtxmath`, etc. . . will change them. Think of loading these packages before `mathastext`, else they might undo what `mathastext` did.

More generally any package (such as `amsmath`) dealing with math mode should be loaded *before* `mathastext`.

1.5.4 Sans serif in math

The following set-up often gives esthetically pleasing results: it is to use the sans-serif member of the font family for math, and the serif for text.

```
\renewcommand\familydefault\sfdefault
\usepackage{mathastext}
\renewcommand\familydefault\rmdefault
\begin{document}
```

1.5.5 `mathastext` with `beamer`

Starting with release 3.34 of `beamer`²⁹, `mathastext` is recognized as a “math font package”.

²⁶v1.2 adds a customizable tiny space before ' to separate it from the previous letter, this is really needed when using upright letters in math mode with the CM derivative glyph. Compare f' with f' .

²⁷see the `unicodeminus` option if using an OpenType font.

²⁸the amount of lowering can be customized.

²⁹Till TANTAU, Joseph WRIGHT, Vedran MILETIĆ, *A L^AT_EX class for producing presentations and slides*, <https://ctan.org/pkg/beamer>.

Only with earlier **beamer** versions is it necessary to issue `\usefonttheme{professionalfonts}` in the preamble. Example:

```
\documentclass{beamer}
%\usefonttheme{professionalfonts}% obsolete for mathastext since beamer 3.34
\usepackage{newcent}
\usepackage[scaled=.9]{helvet}
\renewcommand{\familydefault}{\rmdefault}
\usepackage[defaultmathsizes,symbolgreek]{mathastext}
\renewcommand{\familydefault}{\sfdefault}
\begin{document}
\begin{frame}
  This is some text and next comes some math:  $E=mc^2$ 
  \[
    E=mc^2=a^n+b^n-c^n=\alpha\beta\gamma
  \]
  \begin{align}
    E&=mc^2\\
    E&=h\nu
  \end{align}
  And again some text.
\end{frame}
\end{document}
```

1.5.6 **mathastext** with **frenchmath**

To use **mathastext** concurrently with the **frenchmath** package^{30 31} of Antoine MISSIER:

- load **frenchmath** with its option `capsit`,
- and load **mathastext** afterwards (with possibly some font packages loaded in-between), passing it the option `frenchmath*`.

Limited testing indicated that the combination of the two packages (using the options as indicated above) works satisfactorily. There may be some minor adjustments to do, as the **mathastext**-ified math font may cause issues to some of the **frenchmath** macros: for exemple `\Oijk` may not work well simply due to the font lacking a dotless `j`, but use then **defaultimath**.

You can either use the Greek related options of **frenchmath** or those of **mathastext**. Quite certainly better not to use both at same time, anyhow this has not been tested and is not supported.

³⁰Antoine MISSIER, *Typesetting mathematics according to French rules*, <https://ctan.org/pkg/frenchmath>.

³¹The package **mismath** also by the Antoine MISSIER may probably be used with **mathastext**, but not in a fully inter-operative way, as the two packages conflict on some aspects. Reports welcome, we have not tested this.

1.5.7 Intervals and separators

For appropriate mark-up and typesetting of intervals with conventions about opening and closing delimiters which are not the default \TeX ones, one may use the `mathtools`³² provided `\DeclarePairedDelimiterX`. For example, here is how one can define an `\Ioo` macro (the letter “o” standing for “open”) for typesetting an open (in the mathematical meaning of the word) interval using square brackets:

```
\DeclarePairedDelimiterX\Ioo[2]{[]}{[]}{#1;#2}
```

Use then $\$I = \Ioo\{A\}\{B\}$ type mark-up in your source, and the derived variants `\Ioo*` or `\Ioo[\Big]` for example will also work.

Note for very advanced users: if employing `\MTnonlettersobeymathxx`, our `\Ioo` must be used as `\Ioo*` or `\Ioo[\Big]` (for example) else it raises an error. Alternatively, replace in the above `]` by `{]}` and `[` by `{[}` and then `\Ioo` works (and also `\Ioo[\Big]`). But `\Ioo*` is broken. This is a known limitation of the `\MTnonlettersobeymathxx` functionality, and is one reason why `mathastext` does not make it the default behavior.

We used in this example the semi-colon as separator. This is seen sometimes in contexts where the interval extremities are decimal numbers, and the language convention is to use the comma as decimal point. The `binarysemicolon` option tells `mathastext` to configure the `;` character to use in math mode “binary infix operator” type spacing, matching observed practice in some mathematical contexts. The `binarysemicolon` option is executed automatically by `mathastext` on receiving either the `frenchmath*` or the `frenchmath+` options.

On the topic of the decimal point, it is recommended to use the `\np` macro from the `numprint`³³ package with its `autolanguage` and `np` options. This is the best choice if one may have to also use the same mathematical expression with numerical quantities in another language having different conventions.

For those languages such as French where the convention is to use as decimal separator a colon, you may alternatively pass to `mathastext` either the `decimalcomma` or the `ncccomma` options, to tell it to load the eponymous packages `decimalcomma`³⁴ or `ncccomma`³⁵ respectively, which make the comma (to some extent) ‘intelligent’, i.e. decide on the spacing type (ordinary or punctuation) depending on next token. Do not load directly the packages but simply use the corresponding option and `mathastext` will do the loading and take appropriate needed measures for compatibility. The `decimalcomma` option is included in the `frenchmath*` option, and the `ncccomma` option is included in the `frenchmath+` option.

(1.3zb)

(1.3zb)

Let’s give another example of usage of `mathtools` here to define a macro for integer ranges:

```
\DeclarePairedDelimiterX\Iffint[2]{\llbracket}{\rrbracket}{#1,#2}
```

³²Morten HØGHOLM, Lars MADSEN and the \LaTeX 3 project, *Mathematical tools to use with amsmath*, <https://ctan.org/pkg/mathtools>. As explained elsewhere in this documentation always load `mathastext` after `mathtools`.

³³Harald Harders, *Print numbers with separators and exponent if necessary*, <https://ctan.org/pkg/numprint>.

³⁴Antoine MISSIER, *Comma for decimal numbers*, <https://ctan.org/pkg/decimalcomma>.

³⁵Alexander I. ROZHENKO, *Use comma as decimal separator in mathematics*, <https://ctan.org/pkg/ncccomma>.

This used control sequences `\llbracket` and `\rrbracket` from the `fourier` package (and possibly others). A poorman definition might be:

```
\ifdefined\llbracket\else \def\llbracket{\[ \! \]} \fi
\ifdefined\rrbracket\else \def\rrbracket{\] \! \]} \fi
```

Regarding open intervals in the French notation such as `]a,b[`, an alternative avoiding usage of specific mark-up is provided by the `ibrackets`³⁶ package which makes the square brackets mathematically active, in the same spirit as for the (semi) ‘intelligent’ comma mentioned above. Brief testing indicates this package is compatible with `mathastext`, even when using multiple math versions. Read the fine print below for some limitations though.

Note for very advanced users: compatibility is only partial as the effect of `ibrackets` is canceled after `\MTnonlettersobeymathxx`. This is expected and a special compatibility layer would be needed, of the same type as has been done to support fully the `decimalcomma` and `nccomma` packages via eponymous `mathastext` options. There is no plan at this time to add such a patch making the compatibility exhaustive.

It is possible to use the `noparenthesis` option to turn off completely the `mathastext` actions on square brackets (and parentheses).

1.6 Math versions

L^AT_EX has the concept of *math versions*³⁷, but most font packages do not define any such version beyond the default normal and bold (the package `unicode-math` for unicode engines does use this concept).

`mathastext` extends the concept of math versions in order to allow the math mode fonts (for letters, digits, punctuation and a few other ascii symbols) used in the different parts of the document to be kept in sync with the text fonts.

Most math symbols (sums, products, integrals, logical signs, etc. . .) are kept the same throughout the document though as it is not in `mathastext` power to modify them.

For examples see the earlier [subsection 1.3](#). The interface to define a `math version` includes the commands `\Mathastext` and `\MTDeclareVersion`.

Once such a `math versions` has been defined in the preamble, `\MTversion{name_of_version}`, or equivalently `\Mathastextversion{name_of_version}`, enacts the font switches when encountered in the body of the document. As is usual with L^AT_EX one can limit the scope to inside a group, or also switch back to the main set-up via `\Mathastextversion{normal}`.

When `\Mathastext` is used in the preamble, it records the current text font defaults (`\familydefault` et al. or what has been configured by `\MTfamily` and similar commands) and (except for the `normal` and `bold` versions if in `subdued` regime) sets up *both* the math font and the text font in the defined `mathastext-math version` to be this text font. It is still possible to switch on via `\MTversion` in the document body distinct fonts for text and math: an optional argument (the name of another `mathastext`-declared math version) to `\MTversion` is allowed

³⁶Antoine MISSIER, *Intelligent brackets*, <https://ctan.org/pkg/ibrackets>.

³⁷`math versions` are discussed in the document `fntguide.pdf` from your T_EX distribution.

(such as for example `\MTversion[newcent]{helvet}` for one of the examples of the [subsection 1.3](#)). It instructs to use as text font the font which was configured to be used in this second `mathastext`-math version.³⁸

The native L^AT_EX command `\mathversion{<version_name>}` would change only the fonts for the math mode, not the text mode fonts. It is important to use rather the package command `\MTversion` (or one of its synonyms `\mathastextversion`, `\Mathastextversion`, `\MTVersion`), with its mandatory argument `{<version_name>}`, as it does additional actions:

- it sets the font for math mode (letters, math operator names, digits, punctuations, some other symbols) according to the version name given as mandatory argument,
- it resets the text font of the document and the `\(family,rm,sf,...)defaults` to their values as registered at the time of definition of the version. *Use the starred variant in case this is not desired.* As explained above it is possible to specify within brackets an extra optional version name, and the text font will be set according to it.

For all math versions if not using the `subdued` option, or only for the non-*normal* and non-*bold* math versions if using the `subdued` option, `\MTversion` does further additional tasks:

- it resets the `\hbar`, `\imath` (see `\inodot`), `\jmath`, math accents (see option `mathaccents`) and minus sign as en dash according to the used font encoding for the `mathastext`-ified text font, (1.3u)
- (see sections 1.8 and 1.9) it re-issues the command `\MTmathactiveletters` to let a to z, A to Z, be mathematically active in order to automatically insert the skips as defined by the user with `\MTsetmathskips`, and the italic corrections (if the font is not italic or slanted),
- (see section 1.10) it resets the extra spaces after the symbols \exists , \forall and before the derivative $'$ to the values as decided by the user in the preamble on a *per version* basis,
- (see section 1.11) it re-issues the commands `\MTmathoperatorsobeymathxx` and `\MTeasyonlettersobeymathxx` to let the math operator names and ('easy') non letter characters obey the math alphabets,

³⁸When not using math versions at all (so not using `subdued` mode either) another way to achieve distinct fonts in text and math is naturally to modify the document text font *after* having loaded `mathastext` (or after last usage of `\Mathastext` without optional argument). Another way is to use `\MTfamily`, `\MTencoding`, `\MTseries`, `\MTshape`, `\MTlettershape` in the preamble before a call to `\Mathastext` which will configure math fonts without having modified the document text fonts. However if one does `\MTversion{normal}` in the document then the text font will be reset to what was recorded as math font by the `\Mathastext` call in the preamble (as said above, when not using `subdued` option).

- in case of option `asterisk`, it re-issues `\MTactiveasterisk`,
- it does the additional set-up for Greek letters in case of the package received one of the Greek related options.

The scope is limited to the current L^AT_EX environment or group.

It is sometimes not compatible with `mathastext` to load a font package after it, as the font package may contain instructions which will modify the math set-up. This may be a bit hidden to the user: for example the `epigrafica` package loads `pxfonts`. Hence it will interfere with `mathastext` if it is loaded after it.³⁹ But one can use instead `\renewcommand{\rmdefault}{epigrafica}`,⁴⁰ followed with `\Mathastext`, or also `\MTfamily{epigrafica}\Mathastext` which will only change the font in math.

To use `epigrafica` for Greek in math mode one can use the package option `LGRgreek` and the command `\MTgreekfont{epigrafica}\Mathastext`. Or `\usepackage{epigrafica}` followed with `\usepackage[LGRgreek]{mathastext}`.

1.7 Greek letters

1.7.1 The Greek-related options

The Computer Modern fonts are very light and thin in comparison to many text fonts, and as a result rarely mix well with them (particularly if the Latin letters in math mode are upright). The following options are provided by `mathastext`:

no option: nothing is done by the package, Greek letters are the default Computer Modern ones or have been set-up by other packages; for example by the `fourier` package with option ‘upright’, which gives upright Greek letters.

LGRgreek: (this was substantially updated at 1.3x, make sure to read the new documentation at [subsection 1.7.3](#)) this option is for fonts which additionally to Latin letters also provide Greek letters in LGR encoding. Here is a list from a 2012 standard T_EX installation: the Computer Modern, Latin Modern, and the CM-LGC fonts; the Greek Font Society fonts (such as GFS Didot), the `epigrafica` and `kerkis` packages, the `txfontsb` package which extends the `txfonts` package with LGR-encoded Greek letters; the Droid fonts, the DejaVu fonts, the `Comfortaa` font, and the `Open Sans` font. The LGR encoded CM/LM fonts (in serif, sans-serif and typewriter family) give the nice Greek letters in upright shape from the `cbfonts` package. To get these letters in your `mathastext` math mode, you can do the following:

³⁹may typically give a ‘too many math alphabets’ error message.

⁴⁰sometimes one needs to look in the `.sty` file of the font package to figure out the font name (it is rarely as here with `epigrafica`, the same as the package name), and, if one does not know the arcana of finding `.fd` files in one’s T_EX distribution, one should look at the log file of a test document to see if for example T1 is available for that font; for `epigrafica` it is not, only OT1 and LGR are possible.

```

% instructions to load the document fonts:
\usepackage{nice_font}
% and then the following:
\renewcommand{\familydefault}{cmr} % or cmss or cmtt for sans resp. mono
\usepackage[LGRgreek]{mathastext}
\renewcommand{\familydefault}{\rmdefault}
\Mathastext % this re-initializes mathastext with the nice_font,
% without changing the LGR font cmr/cmss/cmtt used for Greek letters
% in math mode.
\begin{document}

```

If you use the `italic` option note that the italic Greek letters from the `cbfonts` are not the same glyphs as the default Greek letters from the OML encoded font `cmmi`.

LGRgreek+: extends `LGRgreek` to allow abusive usage of `\mathrm` and alike commands with Greek letters. This is very much not in the spirit (especially with traditional “8bit” TeX fonts) of the L^AT_EX kernel concept of math alphabet commands. Check [subsection 1.7.5](#) for relevant information. (1.3za)

eulergreek: the Greek letters will be taken from the Euler font (the document does not have to load the `eulervm` package, `mathastext` directly uses some file included in this package, as it provides a mechanism to scale by an arbitrary factor the Euler font.) The letters are upright.

symbolgreek: the Greek letters will be taken from the (Adobe Postscript) Symbol font. A command is provided so that the user can scale the Symbol font to let it better fit with the text font. The letters are upright.

selfGreek: this option concerns only the eleven Greek capitals from the OT1-encoding. It does nothing for the lowercase Greek letters. The encoding used in the document does not have to be OT1.

There is also `LGRgreeks` (and `LGRgreeks+`) which tells `mathastext` to pick up in each math version the letters from the LGR encoded font used in that version, and `selfGreeks` to tell `mathastext` to do as for `selfGreek` but separately in all math versions.

Under the `subdued` option the Greek letters in the normal and bold math versions are kept to their defaults as found at the time of loading the package.

The commands `\MTstandardgreek` allow at any point in the document to turn inactive any Greek related option passed to `mathastext`. And conversely `\MTcustomgreek` reactivates it.

1.7.2 Shape of Greek letters

Classic TeX uses in math mode italic lowercase and upright uppercase Greek letters. French typography uses upright shape for both lowercase and uppercase. And the ISO standard is to use italic shape for both lowercase and uppercase.

The Euler and Symbol fonts not being available in other than their default upright shape, this question of shapes for Greek letters raises issues only in the case of the options `LGRgreek` and `selfGreek`.

The options `frenchmath`, `itgreek`, `upgreek`, `itGreek` and `upGreek` modify the Greek letter shapes according to the following rules, listed from the lowest to the highest priority:

no option: the lowercase Greek letters are in the same shape as Latin letters, and the uppercase in the same shape as is applied to digits and operator names,

frenchmath: both lowercase and uppercase are in the same shape as the digits and operator names (most of the time this means “upright shape”, but it can be otherwise),

changed: **itgreek** : says that Greek letters (both lowercase and uppercase) will be in ‘it’ shape. More precisely the expansion of `\MTgreekitdefault` is used. (1.3x)
 This was changed at 1.3x, formerly the value of `\itdefault` which was in force at the time of using `\Mathastext` (or at time of loading the package if no use is made of `\Mathastext`) was used.

changed: **upgreek** : says that Greek letters (both lowercase and uppercase) will be in ‘n’ shape. More precisely the expansion of `\MTgreekupdefault` is used. (1.3x)
 This was changed at 1.3x, formerly the value of `\updefault` which was in force at the time of using `\Mathastext` (or at time of loading the package if no use is made of `\Mathastext`) was used. But since L^AT_EX 2020-02-02 this caused many Font Warnings in the log because `\updefault` is now ‘up’, not ‘n’ as formerly.

itGreek, upGreek: same but they apply only to the uppercase Greek letters. Their effect is computed after having taken into account either `itgreek` or `upgreek` presence.

So, the default gives the classic T_EX behavior when option `italic` was passed.

As mentioned already the package allows to define various “math versions”. There are commands to be used inside the preamble to influence the shapes, and even the font, used for Greek letters in each given `mathastext`-declared math version: `\MTitgreek`, `\MTupgreek`, `\MTitGreek`, `\MTupGreek` and `\MTgreekfont{name_of_font}`.

Their effect is as the options of the alike name, except that the effect applies only to `mathastext`-math versions declared *next* in the preamble (be it via `\Mathastext` or `\MTDeclareVersion`).

To use `\MTgreekfont` you need to know the name of a suitable font family available in LGR encoding: for example `lmr`, `txr` (needs `txfontsb` package on your system), `DejaVuSerif-TLF` (needs `dejavu` package on your system), etc. . .

`\MTitgreek`, `\MTupgreek`, `\MTitGreek`, `\MTupGreek` have some effect only if one of the `LGRgreek`, `LGRgreeks`, `selfGreek` or `selfGreeks` options was passed to the package.

Once any of these commands has been made use of, changes in the shape configuration of the Latin letters will stop having any influence on the shape of the Greek letters.

`\MTgreekfont` has an effect only for `LGRgreek` and `selfGreek`. It is without any effect with `LGRgreeks` and `selfGreeks`.

1.7.3 Control sequences to access directly upright or italic shape for Greek under LGRgreek option

Some changes were made at 1.3x to enhance the `LGRgreek` (and `LGRgreeks`) options with new features. Everything which will be explained here applies only to these two options.

First of all the package now makes available control sequences to access either the upright or italic shape of the Greek letters: `\alphaup`, `\alphait`, etc...⁴¹ Which shape is meant by ‘up’ or ‘it’ is configured via defining `\MTgreekupdefault` and `\MTgreekitdefault` respectively prior a `\Mathastext` command in the preamble (possibly with [*version_name*] optional argument). Their default definitions are to expand to ‘n’ and ‘it’ respectively. They can also be defined prior to loading `mathastext`.

See the [Table 1](#) and [Table 2](#) for illustrations (using here the Libertinus Serif font). (1.3x)

The regular control sequences without ‘up’ or ‘it’ postfix will map to either one of the two versions according to how the shapes were configured, i.e. in almost all cases via usage of either the `itgreek`, `upgreek`, etc. . . options or `\MTitgreek` et al. commands. This is on a per `mathastext`-enriched math version basis, depending only on how the options or commands were used in the preamble.

Furthermore two math alphabets are provided (1.3x)

```
\mathgreekup
\mathgreekit
```

which can be used to map a letter to the corresponding Greek fonts:

```

 $\mathgreekup{a}=\mathgreekup{\alpha}=\mathgreekup{\alphait}=\alphaup$
      \alpha = \alpha = \alpha = \alpha
 $\mathgreekup{G}=\mathgreekup{\Gamma}=\mathgreekup{\Gammaait}=\Gammaaup$
      \Gamma = \Gamma = \Gamma = \Gamma
 $\mathgreekit{z}=\mathgreekit{\zeta}=\mathgreekit{\zetaait}=\zetaait$
      \zeta = \zeta = \zeta = \zeta$$$ 
```

⁴¹No check is done of pre-existing such math symbol, they will be replaced by the `mathastext` definition with no warning. If they happen to be pre-defined as \LaTeX commands, not as math symbols, errors will happen during the loading of `mathastext`.

<code>\Alphaup A</code>	<code>\Xiup Ξ</code>	<code>\alphaup α</code>	<code>\xiup ξ</code>
<code>\Betaup B</code>	<code>\Omicronup O</code>	<code>\betaup β</code>	<code>\omicronup o</code>
<code>\Gammaup Γ</code>	<code>\Piup Π</code>	<code>\gammaup γ</code>	<code>\piup π</code>
<code>\Deltaup Δ</code>	<code>\Rhouup P</code>	<code>\deltaup δ</code>	<code>\rhoup ρ</code>
<code>\Epsilonup E</code>	<code>\Sigmaup Σ</code>	<code>\epsilonup ε</code>	<code>\sigmaup σ</code>
<code>\Zetaup Z</code>	<code>\Tauup T</code>	<code>\zetaup ζ</code>	<code>\tauup τ</code>
<code>\Etaup H</code>	<code>\Upsilonup Y</code>	<code>\etaup η</code>	<code>\upsilonup υ</code>
<code>\Thetaup Θ</code>	<code>\Phiup Φ</code>	<code>\thetaup θ</code>	<code>\phiup φ</code>
<code>\Iotaup I</code>	<code>\Chiup X</code>	<code>\iotaup ι</code>	<code>\chiup χ</code>
<code>\Kappaup K</code>	<code>\Psiup Ψ</code>	<code>\kappaup κ</code>	<code>\psiup ψ</code>
<code>\Lambdaup Λ</code>	<code>\Omegaup Ω</code>	<code>\lambdaup λ</code>	<code>\omegaup ω</code>
<code>\Muup M</code>	<code>\Digammaup F</code>	<code>\muup μ</code>	<code>\digammaup Ϝ</code>
<code>\Nuup N</code>		<code>\nuup ν</code>	<code>\varsigmaup Ϛ</code>

Table 1: Greek letters via ‘up’ control sequences (math mode only)

<code>\Alphait A</code>	<code>\Xiit Ξ</code>	<code>\alphait α</code>	<code>\xiit ξ</code>
<code>\Betait B</code>	<code>\Omicronit O</code>	<code>\betait β</code>	<code>\omicronit o</code>
<code>\Gammait Γ</code>	<code>\Piit Π</code>	<code>\gammait γ</code>	<code>\piit π</code>
<code>\Deltait Δ</code>	<code>\Rhoit P</code>	<code>\deltait δ</code>	<code>\rhoit ρ</code>
<code>\Epsilonit E</code>	<code>\Sigmit Σ</code>	<code>\epsilonit ε</code>	<code>\sigmit σ</code>
<code>\Zetait Z</code>	<code>\Tait T</code>	<code>\zetait ζ</code>	<code>\tauit τ</code>
<code>\Etait H</code>	<code>\Upsilonit Y</code>	<code>\etait η</code>	<code>\upsilonit υ</code>
<code>\Thetait Θ</code>	<code>\Phiit Φ</code>	<code>\thetait θ</code>	<code>\phiit φ</code>
<code>\Iotait I</code>	<code>\Chiit X</code>	<code>\iotait ι</code>	<code>\chiit χ</code>
<code>\Kappait K</code>	<code>\Psiit Ψ</code>	<code>\kappait κ</code>	<code>\psiit ψ</code>
<code>\Lambdait Λ</code>	<code>\Omegait Ω</code>	<code>\lambdait λ</code>	<code>\omegait ω</code>
<code>\Muit M</code>	<code>\Digammait F</code>	<code>\muit μ</code>	<code>\digammait Ϝ</code>
<code>\Nuit N</code>		<code>\nuit ν</code>	<code>\varsigmait Ϛ</code>

Table 2: Greek letters via ‘it’ control sequences (math mode only)

$\mathit{\Omega} = \mathit{\Omega} = \mathit{\Omega} = \mathit{\Omega}$

Some refactoring⁴² was required to achieve this at 1.3x and it is not 100% backwards compatible: if none of the `itgreek` etc. . . things was used, the Greek letters formerly would follow the shape of Latin letters (for lowercase Greek) and of operator names (for uppercase Greek). Now, some check is made for each of these two shapes whether it is ‘it’ or ‘sl’ and then the ‘italic’ shape, i.e. `\MTgreekitdefault` which by default is ‘it’ (without the quotes) is used, else the ‘upright’ shape, i.e. `\MTgreekupdefault` which by default expands to ‘n’ (without the quotes) is used. Naturally these checks are done on a per `mathastext`-math version basis, if multiple math versions are used. (1.3x)

So for example those who used some adventurous ‘sc’ for the main shape (the one used per default for operator names) and used the option `LGRgreek` but none of the `itgreek` et al. options, and none of the `\MTitgreek` et al. commands, now will need to adjust `\MTgreekupdefault` to expand to ‘sc’ prior to some `\Mathastext` or `\Mathastext` [*version_name*] or `\MTDeclareVersion` in the preamble depending on context.

It is hoped most documents, even those using multiple math versions, which made use of the `LGRgreek` (or `LGRgreeks`) option will simply produce unmodified output. Please report to the author unexpected results not fitting the above attempted description of the only partial backwards compatibility.

1.7.4 `\mathgreekupbold` and `\mathgreekitbold`

Again this applies only to `LGRgreek` and `LGRgreeks` options (and the 1.3za added `LGRgreek+` and `LGRgreeks+`).

See the [Table 3](#) and [Table 4](#) for illustration of usage (in math mode only) of code (1.3za) such as

```
\mathgreekupbold{\alpha}
or \mathgreekitbold{\alpha}
```

Note that all three of `\alpha`, `\alphaup` and `\alphait` would give the same output. These two tables again use the Libertinus Serif font via an `mathastext` math version which was configured in the preamble using this set-up (and the package `LGRgreek` option):

```
\MTfamily{LibertinusSerif-TLF}
\MTlettershape{n}
\MTseries{m}
\MTgreekfont{LibertinusSerif-TLF}
\MTupgreek
\Mathastext[libertinus]
```

⁴²Technically, formerly two symbol fonts were declared, one for the lowercase Greek letters and one for the uppercase Greek letters; now those are dropped and replaced by two symbol fonts, one for ‘italic’ Greek letters, the other for ‘upright’ Greek letters.

Some examples here to illustrate the effect of the math alphabet commands on Latin letters also:

```

 $\mathgreekupbold{a}=\mathgreekupbold{\alpha}$ 
 $\alpha = \alpha$ 
 $\mathgreekupbold{G}=\mathgreekupbold{\Gamma}$ 
 $\Gamma = \Gamma$ 
 $\mathgreekitbold{z}=\mathgreekitbold{\zeta}$ 
 $\zeta = \zeta$ 
 $\mathgreekitbold{W}=\mathgreekitbold{\Omega}$ 
 $\Omega = \Omega$ 

```

\backslash Alpha \rightarrow A	\backslash Xi \rightarrow Ξ	\backslash alpha \rightarrow α	\backslash xi \rightarrow ξ
\backslash Beta \rightarrow B	\backslash Omicron \rightarrow Ο	\backslash beta \rightarrow β	\backslash omicron \rightarrow ο
\backslash Gamma \rightarrow Γ	\backslash Pi \rightarrow Π	\backslash gamma \rightarrow γ	\backslash pi \rightarrow π
\backslash Delta \rightarrow Δ	\backslash Rho \rightarrow Ρ	\backslash delta \rightarrow δ	\backslash rho \rightarrow ρ
\backslash Epsilon \rightarrow E	\backslash Sigma \rightarrow Σ	\backslash epsilon \rightarrow ε	\backslash sigma \rightarrow σ
\backslash Zeta \rightarrow Z	\backslash Tau \rightarrow T	\backslash zeta \rightarrow ζ	\backslash tau \rightarrow τ
\backslash Eta \rightarrow H	\backslash Upsilon \rightarrow Υ	\backslash eta \rightarrow η	\backslash upsilon \rightarrow υ
\backslash Theta \rightarrow Θ	\backslash Phi \rightarrow Φ	\backslash theta \rightarrow θ	\backslash phi \rightarrow φ
\backslash Iota \rightarrow I	\backslash Chi \rightarrow Χ	\backslash iota \rightarrow ι	\backslash chi \rightarrow χ
\backslash Kappa \rightarrow K	\backslash Psi \rightarrow Ψ	\backslash kappa \rightarrow κ	\backslash psi \rightarrow ψ
\backslash Lambda \rightarrow Λ	\backslash Omega \rightarrow Ω	\backslash lambda \rightarrow λ	\backslash omega \rightarrow ω
\backslash Mu \rightarrow M	\backslash Digamma \rightarrow F	\backslash mu \rightarrow μ	\backslash digamma \rightarrow Ϝ
\backslash Nu \rightarrow N		\backslash nu \rightarrow ν	\backslash varsigma \rightarrow ς

Table 3: Greek control sequences in the argument of \backslash mathgreekupbold.

1.7.5 Special behavior of \backslash mathrm, \backslash mathbf, \backslash mathit with Greek letters via the LGRgreek+ option

With option **LGRgreek+** or **LGRgreeks+**, **mathastext** makes Greek letters control sequences \backslash alpha, \backslash beta, ... (but not \backslash alphaup or \backslash betait and the others) react in a special manner within the scope of \backslash mathnormal, \backslash mathrm, \backslash mathit, \backslash mathbf, and \backslash mathnormalbold, but not further math alphabet commands, and not when using the **mathastext** defined commands named with an uppercased initial. (1.3za)

\backslash Alpha \rightarrow A	\backslash Xi \rightarrow Ξ	\backslash alpha \rightarrow α	\backslash xi \rightarrow ξ
\backslash Beta \rightarrow B	\backslash Omicron \rightarrow Ο	\backslash beta \rightarrow β	\backslash omicron \rightarrow ο
\backslash Gamma \rightarrow Γ	\backslash Pi \rightarrow Π	\backslash gamma \rightarrow γ	\backslash pi \rightarrow π
\backslash Delta \rightarrow Δ	\backslash Rho \rightarrow Ρ	\backslash delta \rightarrow δ	\backslash rho \rightarrow ρ
\backslash Epsilon \rightarrow E	\backslash Sigma \rightarrow Σ	\backslash epsilon \rightarrow ε	\backslash sigma \rightarrow σ
\backslash Zeta \rightarrow Z	\backslash Tau \rightarrow Τ	\backslash zeta \rightarrow ζ	\backslash tau \rightarrow τ
\backslash Eta \rightarrow H	\backslash Upsilon \rightarrow Υ	\backslash eta \rightarrow η	\backslash upsilon \rightarrow υ
\backslash Theta \rightarrow Θ	\backslash Phi \rightarrow Φ	\backslash theta \rightarrow θ	\backslash phi \rightarrow φ
\backslash Iota \rightarrow I	\backslash Chi \rightarrow Χ	\backslash iota \rightarrow ι	\backslash chi \rightarrow χ
\backslash Kappa \rightarrow K	\backslash Psi \rightarrow Ψ	\backslash kappa \rightarrow κ	\backslash psi \rightarrow ψ
\backslash Lambda \rightarrow Λ	\backslash Omega \rightarrow Ω	\backslash lambda \rightarrow λ	\backslash omega \rightarrow ω
\backslash Mu \rightarrow M	\backslash Digamma \rightarrow N/A	\backslash mu \rightarrow μ	\backslash digamma \rightarrow N/A
\backslash Nu \rightarrow N		\backslash nu \rightarrow ν	\backslash varsigma \rightarrow ς

Table 4: Greek control sequences in the argument of the `\mathgreekitbold` command. This font has no bold italic Digamma nor digamma (last tested 2023/12/19).

Here is an example

	$abCD\alpha\pi\Delta\Gamma$
<i>mathnormal</i>	<i>abCDαπΔΓ</i>
<i>mathrm</i>	<i>abCDαπΔΓ</i>
<i>mathit</i>	<i>abCDαπΔΓ</i>
<i>mathbf</i>	abCDαπΔΓ
<i>mathnormalbold</i>	abCDαπΔΓ
<i>mathgreekup</i>	αβ“ΔαπΔΓ
<i>mathgreekit</i>	αβ“ΔαπΔΓ
<i>mathgreekupbold</i>	αβ“ΔαπΔΓ
<i>mathgreekitbold</i>	αβ“ΔαπΔΓ

It used this source:

```

\[\def\zzz{abCD\alpha\pi\Delta\Gamma}
\begin{array}{rc}
& \&\zzz\& \\
mathnormal& \mathnormal{\zzz}\& \\
mathrm& \mathrm{\zzz}\& \mathrm on Greek is like \mathgreekup \\
mathit& \mathit{\zzz}\& \mathit on Greek is like \mathgreekit \\
mathbf& \mathbf{\zzz}\& \mathbf on Greek is like \mathgreekupbold \\
mathnormalbold& \mathnormalbold{\zzz}\& \\
mathgreekup& \mathgreekup{\zzz}\& \\
mathgreekit& \mathgreekit{\zzz}\& \\
mathgreekupbold& \mathgreekupbold{\zzz}\& \\
mathgreekitbold& \mathgreekitbold{\zzz}\&
\end{array}

```

```
\end{array}
\]
```

This was typeset here using a “libertinustexstyle” math version which (differently from the one used in an earlier section) has the default T_EX settings for the shape of Latin and Greek letters: i.e. italic Latin and lowercase Greek, upright uppercase Greek. Its preamble definition was something like this:

```
\MTfamily{LibertinusSerif-TLF}
\MTgreekfont{LibertinusSerif-TLF}
\MTlettershape{it}% not needed with italic option if nothing was changed prior
\MTitgreek\MTupgreek% this is also the default configuration
\Mathastext[libertinustexstyle]
```

The difference with using only `LGRgreek` option is that with the latter the Latin math alphabets such as `\mathrm`, `\mathit`, `\mathbf` produce a Latin letter when acting on a Greek control sequence, as the latter are defined by `mathastext` under `LGRgreek` to be of “variable family type” for usage with `\mathgreekup` and `\mathgreekit`. With `LGRgreek+`, the Greek control sequences are not `mathchar` tokens anymore but macros with conditionals detecting some flag set by custom `\mathnormal`, `\mathnormalbold`, `\mathrm`, `\mathit`, and `\mathbf`.

`mathastext` has no logical way to sync shape of Latin and Greek letters once usage has been made of Greek related commands. Hence `\mathnormal` is currently configured to do nothing on Greek letters. This may change, please consider this behavior unstable.

Remark: this `LGRgreek+` functionality is considered by its author an abuse of the concept of a math alphabet command and required accomodating a serious deviation from internal logical design of `mathastext`. I don’t know if it is because L^AT_EX documentations are deficient or misleading on such matters but it appears many L^AT_EX users are surprised when $\mathrm{\pi}$ does not give an upright pi letter but this is completely to be expected in a world with fonts having only 128 or 256 glyphs, and from the fact that `\mathrm` and `\mathbf` originate in Plain T_EX `\rm` and `\bf` and are still quite akin to it, they are font switching commands nothing more or less.

1.8 Extra spaces around letters

This is a new feature added with release 1.3: the command `\MTsetmathskips` allows the user to set up some spaces (more precisely, ‘mu glue’; but stretch and shrink are discarded) to be automatically inserted around the letters in math mode. Some (very) unrealistic uses:

```
% this may be anywhere in the document (also within a math group):
\MTsetmathskips{x}{20.33mu}{15.66mu}% 20.33mu before all x's and 15.66mu after.
\MTsetmathskips{y}{\thickmuskip}{\thickmuskip}%
\MTsetmathskips{z}{10mu}{5mu}% stretch and shrink are anyhow without effect.
\MTsetmathskips{A}{\muexpr \thickmuskip*2}{\muexpr \medmuskip-\thinmuskip/2}%
```

Here is what `\wxytz^{\wxytz}=BAC^{\{BAC\}}` then gives using the Times font: $w x t y t z^w x t y t z = B A C^B A C$. Any \TeX group or \LaTeX environment limits as usual the scope of this command. Furthermore the command `\MTunsetmathskips` cancels previous use of `\MTsetmathskips` for a given letter.

The implementation relies on the ‘mathematical activation’ of letters, which is done by default by the package since release 1.2b. Should this cause compatibility problems, the command `\MTmathstandardletters` cancels it entirely. To reactivate it, there is `\MTmathactiveletters`. Note that `\MTmathactiveletters` is done automatically by `mathastext` when loaded, and also each time the package enhanced math-version-switch command `\MTversion` is used, except for the normal and bold math versions under the `subdued` option.

The extra skips are set at natural width; they do not contribute to the overall stretchability or shrinkability of the math formula and do not create break points.

Changed with 1.3i: they are *not* applied within the scope of math alphabet commands.

1.9 Italic corrections

Note: this is somewhat technical discussion which may well be skipped in its entirety on first reading.

With the `italic` option the letters in math will be generally in italic shape (and, normally, upright in operator names).

For the built-in placement routines of \TeX in math mode to work as well as they usually do, the characters from the math italic font obviously should have their bounding boxes wide enough for the glyphs not to collide with other symbols. A letter from a text italic font such as f extends way out of its declared bounding box; let us compare the bounding boxes⁴³ for the letter f in the math italic font to the one from the text italic font: f vs. f .

This could make us think that attempting to use in math a text italic font will lead to disaster. Well, surprisingly the situation is not that bad. Sure $\mathbf{f(x)}$ is wider with the standard math italic $\mathit{f(x)}$ (21.31474pt) than it is with the text italic font used in math:⁴⁴ $\mathit{f(x)}$ (19.74986pt) but we should be surprised that our text italic f did not end up even closer to the opening parenthesis. Why is it so?

The explanation is that \TeX uses in such a situation the *italic correction* for the letter f . The italic correction also exists and is used for the math italic font, it was inserted in \mathbf{f} without us having to ask anything. Its value is 1.17865pt for the math italic f and 1.8919pt for the text italic f .⁴⁵ With the italic corrections

⁴³let’s be honest, we are lying here about what exactly the first of these is bounding; this is explained later!

⁴⁴we used simply `\mathit{f(x)}`.

⁴⁵these values are for the Latin Modern fonts of course.

included our bounding boxes are indeed more alike: \overline{f} vs \overline{f} .

Without the italic corrections⁴⁶ it is \overline{f} vs \overline{f} . I said that $\$f\$$ included the italic correction automatically, but if we tell \TeX to use the text italic in math, and typeset the alphabet, we obtain something exactly identical to typing the letters in text, hence without any italic correction:

<i>abcdefghijklmnopqrstuvwxy</i>	text italic in text
<i>abcdefghijklmnopqrstuvwxy</i>	text italic in math
<i>abcdefghijklmnopqrstuvwxy</i>	math italic in math
<i>abcdefghijklmnopqrstuvwxy</i>	math italic in text

Where are our italic corrections gone? the last line was done with `\usefont{OML}{m1mm}{m}{it}` and the line before that using math mode is longer and confirms that italic corrections have been used for the math italic in math mode.

Turning to the \TeX book (and its Appendix G) we learn that in such circumstances, for the italic corrections to be put in from the font, one of its parameters, the interword space (aka `\fontdimen2`), should be zero. It is indeed zero for the math italic font, not for the text italic.

It is possible to make \TeX believe it is. Doing so, we obtain in math mode with the text italic:

<i>abcdefghijklmnopqrstuvwxy</i>	text italic in math
<i>abcdefghijklmnopqrstuvwxy</i>	math italic in math

We saw that the italic correction was taken into account automatically (independently of the value of the interword space font parameter) in expressions such as $\$f(x)\$$. Another clever thing done by \TeX is to use it for the placement of superscripts; the next examples systematically use the text italic in math. We see that f^j is very different from f^j ... where the latter was coded with `\hbox{\itshape f}^j`. The inputs `\mathit{\hbox{\itshape f}\^j}` and `\mathit{f^j}` give almost identical results: $\overline{f^j}$ vs $\overline{f^j}$. Close examination reveals that the horizontal spacing is exactly identical, however the exponent in the second case is a bit lower. Anyway, the point is that in the second case the italic correction for f was indeed used.

Subscripts are another matter: they do *not* take into account the italic correction. For example `\mathit{f_i}` gives the same horizontal positions as `\mathit{\hbox{\itshape f}_i}`: f_i vs f_i . Printing them one on another gives f_i and reveals (use the zoom of your viewer!) that only the vertical placement was affected, not the horizontal placement.

We learn in Appendix G of the \TeX book that the italic correction is used for the horizontal shift of the superscript with respect to the position of the subscript: f_i^j , or, going back now to the standard math italics f_i^j . In the next paragraphs we use f_i^i for more accurate comparison of the positioning of the sub- and superscript.

If we try something like this: `\{f\}_i^i` we obtain f_i^i . Our overlapping game with `\rlap{\$f_i^i\$}\{f\}_i^i` gives f_i^i . We discover that the effect of the explicit italic correction has mainly been to translate the subscript horizontally to

⁴⁶here we give correctly the bounding box for the math italic f ... without its italic correction!

be positioned exactly below the superscript!⁴⁷ We most probably do *not* want this to happen for our indices and exponents in math mode. So perhaps we can rejoice in how astute T_EX has been in judiciously using the italic correction data, and there seems to be no need into fiddling with this algorithm which seems to work well even when applied to a text italic font. Actually we may even be of the opinion that the text italic version f_i^i is a bit better-looking than the true math italic f_i^i . . .

But wait... **mathastext** was initially developed to easily use in math mode the document text font not in its italic variant, but as is, so, usually, upright. And upright T_EX fonts may also have italic correction data! And what I just said about the shift of the superscript with respect to the subscript apply equally well to such a font, if T_EX has been told to use it. Let's try Latin Modern Upright for letters in math: f_i^i now gives⁴⁸ f_i^i . We see the italic correction in action for the positioning of the superscript! Compare with $\mathrm{\hbox{f}_i^i}$: f_i^i . Overlapping with $\rlap{\mathrm{f}_i^i}$ gives f_i^i and shows that the upright f has an italic correction which was used to shift the superscript to the right (and it is now in a slightly lower position). Let's now do $\mathrm{f\!/}_i^i$: this gives f_i^i and the subscript is shifted to the right, and is now on the same vertical axis as the superscript. There are also some slight vertical displacements, $\rlap{\mathrm{f}_i^i}$ gives f_i^i .

People will tell me crazy, but if we decide for using upright fonts in math, wouldn't it be satisfying to have the subscript and superscript positioned on the same vertical axis? the letter has no slant, why should the indices display one?

We end up in this strange situation that it is attractive to systematically incorporate the italic corrections after the upright Latin letters in math! But we don't want to do this inside the arguments to math alphabets as this would make impossible the formation of ligatures (the standard ff , ff , \mathbf{ff} , ff all give ligatures ff , ff , ff , and ff and we would like to preserve this behavior).

Starting with version v1.2b, **mathastext** adds the italic correction automatically after each letter of the Latin alphabet in math mode, *except* when these letters are italic or slanted.⁴⁹

These italic corrections are canceled inside the arguments to the math alphabet commands, to allow the formation of ligatures as is expected in the standard default T_EX font set-up in math.

⁴⁷there are also some tiny vertical displacements of the sub- and superscripts.

⁴⁸we just use f_i^i .

⁴⁹the situation is rather ironical! by the way, the warnings in section 1.11 with $\$x^? \$$ or similar are less of an issue here, because the letter is only *followed* by $\backslash/$ and anyhow the whole is put by **mathastext** within group braces, so no surprises with $\$x^y \$$ or \mathbin{x} . Nevertheless it is still true that (in math mode only) the letters a-z, A-Z, expand to composite objects, something which could

The feature-implementing commands `\MTicinmath`, `\MTnoicinmath`, `\MTical-soinmathxx` are described in section 2.2.1.

Note: from brief testing on 2012/12/28, $X_{\text{T}}\text{E}_{\text{X}}$ seems not to obey in math mode italic corrections for OpenType fonts. Hence the $\text{T}_{\text{E}}\text{X}$ placement algorithms for math mode described in this section do not work well when an OpenType (text) font is used for the letters in math mode, and the document is compiled with the $X_{\text{T}}\text{E}_{\text{X}}$ engine. On the other hand $\text{L}^{\text{u}}\text{a}\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ seems to implement the italic corrections when using OpenType fonts, but only with italic fonts (as far as I could tell). Try the following (which will use the OpenType Latin Modern font) on a recent $\text{T}_{\text{E}}\text{X}$ installation and compare the output of both engines:

```
\documentclass{article}
\usepackage{fontspec}
\begin{document}
\Huge
 $\mathrm{f_i}$  \par  $\mathit{f_i}$ 
\end{document}
```

Comment out the `fontspec` line and use $\text{p}^{\text{d}}\text{fL}^{\text{A}}\text{T}_{\text{E}}\text{X}$. All three outputs are different on my $\text{T}_{\text{E}}\text{X}$ installation. $X_{\text{T}}\text{E}_{\text{X}}$ does not have the italic corrections. $\text{L}^{\text{u}}\text{a}\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ does, but only for the italic font. $\text{p}^{\text{d}}\text{fL}^{\text{A}}\text{T}_{\text{E}}\text{X}$ has them for both the italic and the upright font.⁵⁰

1.10 Extra glue after `\exists`, `\forall`, and before the prime glyph

`\MTforallskip`, `\MTexistsskip`, and `\MTprimeskip` are three commands with each a mandatory argument like for example `3mu` plus `1mu` minus `1mu` or just `2.5mu`. They are especially useful when using an upright font in math mode. The `mu` is a unit length used in math mode (‘math unit’, 1/18th of the ‘quad’ value of the symbol font in the current style). Its value is relative to the current math style. Its use is **mandatory** in the commands described here.

- compare $\forall B$ with $\forall B$, typeset after `\MTforallskip{2mu}`,
- compare $\exists N$ with $\exists N$, typeset after `\MTexistsskip{2mu}`,
- and finally compare f' with f' , typeset after `\MTprimeskip{2mu}`.

These three commands may be used throughout the document, or also in the preamble, in which case the declared math versions will record the then current values of the skips. `mathastext` applies the following (small) default skips: `0.6667mu` for the skip after \forall , `1mu` for the skip after \exists , and `0.5mu` for the skip before the prime. The examples above become $\forall B$, $\exists N$ and f' .⁵¹

surprise other packages. The command `\MTmathstandardletters` cancels this mechanism.

⁵⁰2016/11/04: the situation hasn’t changed, at least on current TL2016.

2022/10/29: no change with current TL2022.

⁵¹the derivative glyph from the `txfonts` math symbols adapts itself better to an upright letter, no skip seems to be needed then.

With the `italic` option the defaults are set to zero. Indeed $\forall B$, $\exists N$ and f' look fine without additional skips. If the document decides then to declare in the preamble a math version with an upright font it is thus recommended to use the commands in the preamble before the `\Mathastext[version_name]` (or `\MTDeclareVersion`) command defining the version. They will be remembered when this math version is entered in the document. The commands may also be used directly in the document body.

Under the `subdued` option, the *normal* math version (at the start of the document body, or after `\MTversion{normal}`) and the *bold* math version (either at the start of the document body after `\boldmath`, or after `\MTversion{bold}`) do not have any extra skip inserted (even one of zero width) after \forall , \exists , or before the $'$.

1.11 Extended scope of the math alphabets commands

Ever since the initial version of the package, some characters usually unaffected by the math alphabet commands `\mathbf`, `\mathtt`, `\mathsf`... are declared to be of ‘variable family type’, in order for them to obey these commands: for example the hash sign `#` gives `#` if input as `$$\mathbf{\#}$$` (`mathastext`, especially in its beginnings, wanted as many characters as possible to be picked up from the text font and to behave similarly to letters and digits).

So it was especially frustrating that mathematical characters such as `+`, `<`, or `]` could not be declared of ‘variable family’ (in addition to being picked up in the text font) as this would, for reasons of the inner workings of \TeX , not be compatible with the automatically inserted spaces around them.

A revolutionary ;-) novelty is introduced with version 1.2 of the package: (1.2)

1. the pre-declared or user-declared (using the `amsmath \DeclareMathOperator` or equivalent) operator names obey the math alphabet commands,⁵²
2. and, *optionally*, all non alphabetical characters⁵³ treated by `mathastext`, *i.e.*, if not disabled by options, `!?`, `:`, `;`, `+`, `-`, `=`, `()`, `[]`, `<`, `>`, `{}`, the asterisk `*`, and `.`, `/`, `\`, `#`, `$`, `%` &⁵⁴ will also obey the math alphabet commands (when not used as delimiters). The important thing is that the spaces added by \TeX before and after are not modified.

⁵²contrarily to the next feature, this one is not likely to create incompatibilities with other packages, so it is activated by default.

⁵³of course some of them are input preceded by a backslash, and the backslash itself is input as `\backslash`.

⁵⁴`#`, `$`, `%` & obey the math alphabets since the initial version of `mathastext`; the dot `.`, the slash `/`, the vertical bar `|` and the backslash `\` do not have specific spacings inserted by \TeX around them, and the procedure is then activated by default since 1.2 for these characters as they are ‘easy non-letters’. But for `\mid` and `\setminus` which are `|` and `\` with special spacing (of type `\mathrel` and `\mathbin` resp.) the procedure has some constraints explained in the framed box on next page and the activation requires `\MTnonlettersobeymathxx`.

Let us compare, for example, the new behavior of `\mathtt` and `\mathbf`

$$(\sin(n!) < \cos(m - p)?) \quad [\sin(\mathbf{x} + \mathbf{y}) = \cos(\mathbf{z} - \mathbf{t})]$$

with the traditional default behavior:

$$(\sin(n!) < \cos(m - p)?) \quad [\sin(\mathbf{x} + \mathbf{y}) = \cos(\mathbf{z} - \mathbf{t})]$$

The first feature is activated by default, except of course for the normal and bold math versions when the package was given the *subdued* option. The second feature is *off* by default for the characters listed first. It is *on* for the ‘easy’ cases `# $ % & . / | \` (activating the feature for them puts no constraint on the user input and should not be too upsetting to other packages), and also for `*` but only if this was required explicitly by the option `asterisk`, as the user then is supposed to know that `R^*` is no valid input anymore and should be replaced by `R^{*}`. The remaining ‘difficult’ cases create similar constraints, which will be commented more upon next. The commands⁵⁵ for deactivation are:

```
\MTmathoperatorsdonotobeymathxx,
\MTeasynonlettersdonotobeymathxx,
\MTnonlettersdonotobeymathxx,
```

and those for activation:

`\MTmathoperatorsobeymathxx` regards operator names and is executed by default,

```
\MTeasynonlettersobeymathxx
```

is done by default and applies to

$$\# \$ \% \& . / | \backslash$$

and also to `*` under package option `asterisk`,

`\MTnonlettersobeymathxx` is *not* done by default (see explanations why in the framed box next) and regards

$$! ? , ; + - = () [] < >$$

and also `\mid` and `\setminus` but applies to the braces `{ }` only if `\MTexplicit-bracesobeymathxx` is also used.

Important: the package does `\MTnonlettersdonotobeymathxx` by default. The reason is that activating the mechanism adds some constraints to the way things must be input, adding

```
\usepackage{mathastext}\MTnonlettersobeymathxx
```

to a pre-existing document might well create errors: all these characters treated by `mathastext`, such as `?`, `[`, `<` now represent (in math mode only!) *two* ‘tokens’ and this will utterly confuse `TeX` if some precautions are not taken: `$x^?$`,

⁵⁵these commands are to be used outside of math mode. Their scope is limited to the current `LaTeX` environment or group. They use the `\everymath` and `\everydisplay` mechanism so if the document needs to modify these token lists it has to do so in a responsible manner, extending not annihilating their previous contents.

$\$R^+ \$$ or $\$\mathop{\langle A \rangle}$ *must* now be coded as $\$x^{?} \$$, $\$R^{+} \$$ and $\$\mathop{\langle A \rangle}$ (the rule is to do as if $\{$, $\}$, \langle or \rangle were each really *two* characters).

Even if this rule is respected in the document source, it is still a possibility that incompatibilities with other packages will arise because `mathastext` does a *mathematical activation* of the characters which could be unexpected and unchecked for by other packages. This is precisely the case with the `amsmath` package, and the problem goes away by just making sure that `amsmath` is loaded before `mathastext` (generally speaking, `mathastext` should be loaded last after all packages dealing with math things).

The braces $\{$ and $\}$ remain unresponsive to the alphabet changing commands even after `\MTnonlettersobeymathxx`. One must issue also `\MTexplicitbracesobeymathxx`, but it has the disadvantage that $\{$ and $\}$ become then unusable as variable-size delimiters: $\big\{$ or $\big\}$ create errors and one must make use of $\big\lbracket$ and $\big\rbracket$. But one can now enjoy $\{a, a > b\}$, $\{\mathbf{a}, \mathbf{a} > \mathbf{b}\}$, $\{a, \mathbf{a} > \mathbf{b}\}$, or even $\{\mathbf{a}, \mathbf{a} > \mathbf{b}\}$.⁵⁶⁵⁷

Even with `\MTnonlettersobeymathxx`, the parentheses-like symbols $(,)$, $[,]$, $<$ and $>$ and the slashes $/, \backslash$, if used as left/right delimiters (i.e. with \left/\right) do not react to math alphabet commands. This is mainly explained by the fact that the text font will not contain suitable glyphs, hence no attempt was made to make the delimiters pick up their glyphs there.

But `mathastext` does try to pick up most of the ‘small variants’ of the delimiters from the text font: $\left\langle x \right\rangle$ gives $\langle x \rangle$ (but $\left\langle \mathbf{x} \right\rangle$ gives $\langle \mathbf{x} \rangle$.) Notice that this differs from standard L^AT_EX for which $\left\langle x \right\rangle$ gives $\langle x \rangle$. As it is perhaps a bit strange to have $\langle x \rangle$ next to $\langle X \rangle$ there is option `nosmalldelims`: with this option the small-sized variants of the delimiters are not modified by `mathastext` (option `nosmalldelims` has the side effect that, for the non-delimiter uses of $\{, \}$ to be `mathastext`-ified it is necessary to issue `\MTnonlettersobeymathxx` and `\MTexplicitbracesobeymathxx`.)

At any rate, as said above, whether ‘small’ or not, delimiters are unresponsive to math alphabet commands, due to technical aspects of T_EX, and the way `mathastext` handles these things. Examples: $\mathbf{\langle a, b \rangle}$ gives $\langle \mathbf{a}, \mathbf{b} \rangle$ (no use of \left/\right , hence brackets do obey the math alphabets — as we issued `\MTnonlettersobeymathxx` a bit earlier), $\mathbf{\left\langle a, b \right\rangle}$ gives $\langle \mathbf{a}, \mathbf{b} \rangle$ (brackets used with \left/\right do not obey the math alphabets), $\mathbf{\mathop{\langle a, b \rangle}}$ gives $\langle \mathbf{a}, \mathbf{b} \rangle$ (no \left/\right , brackets do obey the math alphabets).

For comparison, the L^AT_EX standard behavior for

⁵⁶this last example uses the `\mathnormalbold` additional alphabet defined by `mathastext`.

⁵⁷Let me recall that braces will anyhow not be handled at all by `mathastext` if the document font encoding is OT1, except under option `alldelims`.

`\mathbf{\mathopen{<}a,b\mathclose{>}}`
is `<a,b>` (neither brackets nor the comma do respond).

1.12 Unicode engines

`mathastext` is minimally Unicode aware since 1.12 and can be used with Xe_{La}TeX or Lua_{La}TeX. Starting with release 1.3, it needs `luatex` to be at least as recent as the one which was provided with the TL2013 distribution.

However `mathastext` applies only to (a subset of) the 32–127 ASCII range, and optionally to Greek letters, but for the latter only if provided via “TeX fonts” such as Euler, Symbol or LGR-encoded fonts. It does not know how to use a given Unicode font simultaneously for Latin and Greek letters.

Thus, first consider much better alternatives:

- Since 2018, the package `mathfont`⁵⁸ adapts Unicode text fonts to usage in math mode. It works with both Xe_{La}TeX and Lua_{La}TeX.
- For Xe_{La}TeX only, `mathspec`⁵⁹ also allows usage of arbitrary text fonts in mathematics.
- and of course `unicode-math`⁶⁰ is the standard package for using OpenType fonts which are equipped with the needed extra support being used in TeX math mode.

If using any one of the above you probably don’t need, don’t want, and should not use `mathastext`.

Let me insist that `mathastext` has not been tested in any systematic manner under the Unicode engines; and that it is expected to be most definitely incompatible with `unicode-math`, although your mileage may vary and some features may appear to work.

When using `mathastext` with either Xe_{La}TeX or Lua_{La}TeX it is recommended to use the `fontspec` package (see remark below on `\encodingdefault`). Furthermore, if using `fontspec` it is *necessary* to load it with its `no-math` option, and this *must* happen before loading `mathastext`.

- Use `fontspec` with its `no-math` option, and load it *prior* to `mathastext`. As some packages load `fontspec` themselves (for example `polyglossia`), a

⁵⁸Conrad KOSOWSKY, *Use TrueType and OpenType fonts in math mode* <https://ctan.org/pkg/mathfont>.

⁵⁹Andrew Gilbert MOSCHOU, *Specify arbitrary fonts for mathematics in Xe_{La}TeX* <https://ctan.org/pkg/mathspec>.

⁶⁰Will ROBERTSON, et al., *Unicode mathematics with support for Xe_{La}TeX and Lua_{La}TeX* <https://ctan.org/pkg/unicode-math>.

`\PassOptionsToPackage{no-math}{fontspec}`
early in the preamble might be needed.

- The `amsmath` package, if used, *must* be loaded *prior* to `mathastext`.
- Under `lualatex` engine, it is recommended to also load the package `lualatex-math`.

I already mentioned in the section 1.9 the fact that the italic corrections were not available for OpenType fonts under the $X_{\text{Y}}\text{TeX}$ engine and only partially available for the LuaTeX engine, with the result that the spacings in math mode when using for the letters an upright text font will be less satisfying than with the standard PDFTeX engine (the OpenType fonts not being usable with the latter engine, this is not a criterion of choice anyhow).

To define math versions when using unicode fonts, use `fontspec`'s `\setmainfont` before the `\Mathastext` [*version*] command, or simply before loading `mathastext` for the default math versions.

It is possible to mix usage of Unicode fonts and classical TeX fonts. All used 8bits font encoding must have been passed as options to the `fontenc` package.

1.12.1 The `unicodeminus` option

For legacy reason, `mathastext` uses by default the EN DASH U+2013 for the minus sign in math mode, if the font is determined to be a “Unicode” font.

There is now the `unicodeminus` to use rather MINUS SIGN U+2212.⁶¹ Check [its documentation](#) on page 58. (1.3q)

1.12.2 Two examples

I include here two examples which compiled successfully with $X_{\text{Y}}\text{TeX}$ and LuaTeX , the first one on a Linux machine, the second one on a Mac OS X machine.⁶²

```
\documentclass{article}
\usepackage[hscale=0.8]{geometry}
\usepackage{multicol}
\usepackage[no-math]{fontspec}
\usepackage{lmodern}
\usepackage[subdued,italic]{mathastext}
\setmainfont[Color=999999]{Verdana} \Mathastext[Verdana]
\setmainfont[Color=0000FF]{Arial} \Mathastext[Arial]
\setmainfont[Color=00FF00]{DejaVu Serif} \Mathastext[DejaVu]
```

⁶¹Thanks to Tobias BRINK who asked for this feature.

⁶²A `tex mathastext.dtx` (in a temporary repertory) on a copy of `kpsewhich mathastext.dtx` will extract extended versions of these examples as test files.

```

\MTDeclareVersion{times}{T1}{ptm}{m}{n}
\setmainfont[Color=FF0000]{Andale Mono} \Mathastext[Andale]
\begin{document}
\newcommand\TEST[1]{\MTversion{#1}%
\begin{multicols}{2}
\hbox to\columnwidth{\hbox to\columnwidth{\hfil
$abcdefghijklmnopqrstuvwxyz$\hfil}\kern-2.5em{#1}}
\centerline{ $ABCDEFGHIJKLMNopQRSTUVWXYZ$ }
\centerline{ $0123456789$ }
\centerline{ $!\,?\,*\,,\,\.\,:\,;\,\+\,-\,=\,(\,)\,[,]\,\/,\,\#\,%,
\$\,\/\,\&\,<,\,>,\,|\,\{\,\}\,\backslash$ }
\columnbreak
\centerline{ abcdefghijklmnopqrstuvwxyz }
\centerline{ ABCDEFGHIJKLMNopQRSTUVWXYZ }
\centerline{ 0123456789}
\centerline{ !\,?\,*\,,\,\.\,:\,;\,\+\,-\,=\,(\,)\,[,]\,\/,\,\#\,%,
\$\,\/\,\&\,<,\,>,\,|\,\{\,\}\,\backslash\char92 }
\end{multicols}}
\begin{multicols}{2}
\centerline{\textbf{math mode}}
\columnbreak
\centerline{ \textbf{text} }
\end{multicols}
\TEST{DejaVu}\TEST{Verdana}\TEST{times}\TEST{Andale}
\TEST{Arial}\TEST{bold}\TEST{normal}
\end{document}

```

And now the same thing with fonts available on Mac OS X:

```

\documentclass{article}
\usepackage[hscale=0.8]{geometry}
\usepackage{multicol}
\usepackage[no-math]{fontspec}
\usepackage{lmodern}
\usepackage[subdued,italic]{mathastext}
\setmainfont[Color=FF0000]{Hoefler Text} \Mathastext[Hoefler]
\setmainfont[Color=336633]{American Typewriter}\Mathastext[Typewriter]
\setmainfont[Color=0000FF]{Herculanum} \Mathastext[Herculanum]
\setmainfont[Color=FF00FF]{Didot} \Mathastext[Didot]
\setmainfont[Color=999999]{Comic Sans MS} \Mathastext[Comic]
\begin{document}
--- copy here the code from the previous example ---
\TEST{Didot}\TEST{Comic}\TEST{normal}\TEST{Herculanum}
\TEST{Hoefler}\TEST{Typewriter}\TEST{bold}
\end{document}

```

1.13 Compatibility issues

Compatibility issues (or just questions of who decides last) are naturally to be expected with packages dealing with the math setting; the fix is simply to load

`mathastext` last. And one should always load `amsmath` before `mathastext` (this is especially true when using Unicode engines but applies in general as well).

Any definition made in a package loaded before `mathastext` of the font to be used for letters or for the common characters in the `ascii` basic range will be overruled by the loading of `mathastext` (this includes the case when the earlier package had made the character ‘mathematically active’). Conversely most of the set-up done by `mathastext` may well be overruled by packages loaded later which do math related things.

Starting with version 1.2, `mathastext` makes some characters ‘mathematically active’ to achieve certain effects: automatic insertion of the italic corrections when using an upright text font in math, extended scope of the math alphabet commands which now apply to non-letter symbols (and also to math operator names, but this is much easier to achieve). And the (already mathematically active) right quote is modified to have some extra space added before the derivative glyph ‘.

This is compatible with using `\label` and `\ref` in and outside of math mode. But a difficulty arises when some other package has made the character ‘globally active’ everywhere in the document. The action of `mathastext` is made anew at each mathematical inline or displayed formula. If it is detected that a character has been activated then nothing further will be done (so the `mathastext` feature⁶³ for that character is lost) *except* if it appears that this activation was done by the Babel system. In that case `mathastext` does not make the character mathematically active but it modifies in the appropriate manner the action of Babel for that character in math mode. Furthermore `mathastext` makes the character mathematically *inactive*.⁶⁴

Here is indeed some code that you should **not** try at home:

```
\documentclass{article}
\usepackage[french]{babel}
\usepackage{mathtools}\mathtoolsset{centercolon}
\begin{document}
$: $
\end{document}
```

DO NOT DO THIS AT HOME: it creates an infinite loop.⁶⁵ This is due to the fact that the colon is simultaneously active (this is made by `babel-french` at begin document) and mathematically active (done by `mathtools` in the preamble). The interaction gives an infinite loop. Such a situation will be cured by `mathastext`, even loaded before `mathtools`, *if* use is made of `\MTnonlettersobeymathxx`. At

⁶³italic correction insertion for the latin letters, receptivity to the math alphabet action for the other characters.

⁶⁴only the characters `; , : ! ? + - = < > () [] *` mentioned in section 1.11 as ‘difficult non letters’ (and the right quote ‘) and the latin letters are concerned here; it seems highly improbable that a latin letter $\in \{a-z, A-Z\}$ will have been made globally active (only letters never being used in command names are possible candidates), but `mathastext` has been designed to cope with it, should it happen ...

⁶⁵This seems to still be the case with Babel 3.9f and frenchb.ldf 2.6e, as tested on Sep. 2, 2013. Again tested with up-to-date TL2015 Jan. 15, 2016 with same result.

each math formula `mathastext` will detect that Babel has activated the colon, and will cancel the mathematical activation (the precise definition done by `mathtools` was already lost at begin document due to overwriting by `babel` but the fact that the character was mathematically active remained true).

So far I have briefly described the problem of document active characters (see the test file `mathastexttestalphabets.tex` for more explanations and illustrations, and the commented source code of the package). Pure mathematical activation revealed an incompatibility of another type with `amsmath`. To fix it, `mathastext` now replaces an inner macro of `amsmath` (`\resetMathstrut@`) with its own version.

Always load `amsmath` before `mathastext`.

Actually this last commandment was already made necessary by the use of the text endash to represent the minus sign in math mode, and, especially for Unicode engines, some aspects of the `\DeclareMathOperator` macro from `amsmath`.

Important! As is mentioned in the section 1.11, after command `\MTnonlettersobeymathxx`, characters such as `?`, or `[`, now represent *two* ‘tokens’ and this will utterly confuse TeX if some precautions are not taken. Examples: `0^+` or `$x\mathrel?y$` or `R^*` *must* be input now as `0^{+}` and, respectively, `$x\mathrel{?}y$` or `R^{*}`. This is why the package does `\MTnonlettersdonotobeymathxx` by default.

One thing to take note of is that this mechanism uses the `\everymath` and `\everydisplay`, so if it is needed to add to these TeX ‘token lists’ some additional things this should be done in a way preserving the former contents.

If one issues (after `\begin{document}`) `\everymath={}` and `\everydisplay={}` this annihilates not only all the `mathastext` (evil ?) doings with math active characters but also everything else some other package might have put in these token registers, so it is better, if the need arises to cancel the math activation of characters done by `mathastext` to use the command `\MTeverymathoff`, which does all of `\MTmathoperatorsdonotobeymathxx`, `\MTnonlettersdonotobeymathxx` (already default), `\MTmathstandardletters`, `\MTnormalprime`, and `\MTnormalasterisk`. This is supposed to be used in a group or environment (as there is no `\MTactivemathon`). It must be used prior to entering math mode.

New with 1.3i: `mathastext` patches `\url` of packages `url` and `hyperref`, and also `\nolinkurl`, to force them to do automatically `\MTeverymathoff`. Indeed they use math mode, and it is better to turn `mathastext` off for their dealings.

2 Package commands

2.1 Commands for regular usage

2.1.1 Preamble-only commands

These commands mainly facilitate the definition of math versions, in a `mathastext` extended sense. It is not necessary to use them to activate the package basic functionalities, as loading `mathastext` is enough (except with the `subdued` option).

- `\Mathastext` (or `\mathastext`) reinitializes `mathastext`: it sets the fonts used in math mode (in versions `normal` and `bold`) for letters, digits and a few ascii symbols to the *current* defaults of encoding, family, series and shape.⁶⁶ Both the normal and bold math version are modified by this action of `\Mathastext`.
- `\Mathastext` [*version_name*] rather than redefining the fonts for math mode, `\Mathastext` declares a new *math version*, and it is this math version which will use the then current text font in math mode.⁶⁷
- `\Mathastext` [*version_name*] [*parent_name*] declares *version_name* and configures it to inherit from *parent_name* all which is not under the scope of `mathastext`, such as large symbols. The main use will be with `[bold]` in order for the symbols and large symbols to be typeset as in the bold math version. For example, this document has in its preamble:

```
\usepackage{newcent}% this package makes New Century the roman font
\Mathastext[newcent]% this math version will use New Century
\MTseries{b}          % next \Mathastext will use a bold font
\Mathastext[boldnewcent][bold]% large symbols, etc, will be bold too
We can check that it does work:
```

`\MTversion{newcent}`: *abcde* $\oint \vee \cup \otimes \oplus$

`\MTversion{boldnewcent}`: ***abcde*** $\oint \vee \cup \otimes \oplus$

Naturally, for this one needs an initial math font setup with some nice bold fonts also for large symbols. This is the case with the excellent `txfonts` package of Young RYU. As the present document must use many fonts and declares many math alphabets, we did not load the full package and fonts but only the `largesymbols`:

```
\DeclareSymbolFont{largesymbols}{OMX}{txex}{m}{n}
\SetSymbolFont{largesymbols}{bold}{OMX}{txex}{bx}{n}
\DeclareFontSubstitution{OMX}{txex}{m}{n}
```

⁶⁶`\Mathastext` updates also the font and shapes for the Greek letters (LGRgreek option), and the skips to be inserted after the symbols \forall and \exists , see *infra*.

⁶⁷The allowed version names are as for the \LaTeX `\DeclareMathVersion` macro. *Do not use* `\Mathastext[foo]` with *foo* equal to “normal” or “bold”; this is already taken care of by the initial loading of the package or a later command `\Mathastext` without any optional argument. And it will be rejected.

- `\MTencoding{<enc>}`, `\MTfamily{<fam>}`, `\MTseries{<ser>}`, `\MTshape{<sh>}`, and `\MTlettershape{<sh>}`.⁶⁸ For example valid respective arguments are, respectively, `<T1>`, `<phv>`, `<m>`, `<n>`, and `<it>`: this is the Helvetica font in T1-encoding, regular (medium) series, upright shape, and the letters will be in italic shape. Once used their effect applies to all succeeding calls to `\Mathastext`, and can only be undone by using them again with other settings, again followed by a call to `\Mathastext`.

NOTE: *only* if `\Mathastext` is used next (possibly with a version name as optional argument) will these commands have any real effect.

- `\MTWillUse[<ltsh>]{<enc>}{<fam>}{<ser>}{<sh>}` tells `mathastext` to use the font with the specified encoding, family, series, and shape for the letters and digits (and all other afflicted characters) in math mode. The optional argument `<ltsh>` specifies a shape for the letters, for example `\itdefault`, or directly `<it>` or `<sc>`.
- `\MTDeclareVersion[<ltsh>]{<name>}{<enc>}{<fam>}{<ser>}{<sh>}[<other_version>]`: declares that the document will have access to the font with the specified characteristics, under the math version name `<name>`. For example:

```
\MTDeclareVersion[sc]{palatino}{T1}{ppl}{b}{sl}
```

declares under the name `palatino` a version where mathematics will be typeset using the Palatino font in T1-encoding, bold, slanted, and the letters will in fact be in caps and small caps (and bold).⁶⁹ When the initial optional argument is absent, and `mathastext` was loaded with the `italic` option, then the default letter shape will be `it`,⁷⁰ else letters will have the same shape as used for digits and operator-names.

Another optional argument may be used as last argument. Similarly as its use with `\Mathastext` this makes the declared math version inherit, for things not modified by `mathastext` like large symbols, the font set up of the math version whose name was passed as optional argument (typical use will be with `[bold]`). (1.3c)

- `\MTboldvariant{<var>}`: when used before `\Mathastext`, specifies which bold (`b`, `sb`, `bx`, ...) to be used by `\mathbf` (and `\boldmath`). Default is the `\bfdefault` at the time of loading `mathastext`. When used before the declaration of a version, decides the way `\mathbf` will act in this version.
- `\MTEulerScale{<factor>}`: scales the Euler font by `<factor>`.
- `\MTSymbolScale{<factor>}`: scales the Symbol font by `<factor>`.
- `\MTitgreek`, `\MTupgreek`, `\MTitGreek`, `\MTupGreek`: these commands are active in case the `LGRgreek` option was used; they act as the options of the similar

⁶⁸These commands exist also with long names: `\Mathastextencoding`, etc... The same applies to the other commands mentioned in this section.

⁶⁹I do not especially recommend to use this in real life!

⁷⁰more precisely, the shape is the latest value passed in one of the previously used package commands to specify the shape of letters, or the `\itdefault` of the time of loading the package.

names `itgreek`, `upgreek`, `itGreek`, `upGreek`, but only for the Greek letters in the versions yet to be defined. Their effect become recorded only when the version is declared via `\Mathastext` or `\MTDeclareVersion`.

- `\MTgreekfont{<fontfamily>}`: a command with a mandatory argument which specifies the font family for Greek letters in all `mathastext` math versions declared afterwards via `\Mathastext` or `\MTDeclareVersion`. Only effective if `LGRgreek` (or `LGRgreek+`) or `selfGreek` option was passed to the package.

Check the `LGRgreek` documentation for some relevant information.

2.1.2 Commands for body or math

- `\MTversion[<nametext>]{<namemath>}`, `\MTversion*{<namemath>}`, also known as `\Mathastextversion` (and as `\MTVersion`, and `\mathastextversion`):

- the non-starred version changes *both* the document text fonts and the math fonts (for those characters treated by `mathastext`): the mandatory argument is the math version to be used for math; the optional argument is the name of (another) `mathastext`-declared math version, the font which was chosen during its declaration will be set as document text font (and `\familydefault` etc...also are redefined). In the absence of the optional argument, the mandatory one is used. The versions *must* be either `normal`, or `bold`, or previously declared ones via `\Mathastext` or `\MTDeclareVersion`.

- the starred variant does the math set-up, but changes *nothing* to the text fonts (see [subsection 1.6](#) for a description of the math set-up, which summarizes what is done additionally to only using L^AT_EX's `\mathversion`). (1.3c)

`\MTversion[<nametext>]{<namemath>}` does `\MTeverymathdefault` (except for `\MTversion{normal}` and `\MTversion{bold}` under package option `subdued`), which in particular activates the insertion of skips around letters specified by `\MTsetmathskips` and also, if the font used is not oblique the insertion of italic corrections (for better positioning of subscripts; see the discussion in [subsection 1.9](#)). Under the `frenchmath` option the package checks separately the letter shape for lowercase and uppercase.

`\MTversion` also does `\MTexistsdoesskip`, `\MTforallldoesskip`, and also `\MTprimedoesskip`, `\MTmathoperatorsobeymathxx`, except under the `subdued` option for *normal* and *bold*, in which case it does the opposite actions. (1.3j)

- `\hbar`: this macro is by default redefined (in a way compatible with the `italic` option) combining the `h` letter and the `ˉ` accent from the `mathastext` font. Note that `\mathrm{\hbar}` and `\mathbf{\hbar}` will work and that `\hbar` does scale in subscripts and exponents. Since 1.3u, this is a priori compatible with all 8bits

text font encodings supporting the $\vec{}$ text accent in the LaTeX way.^{71 72} (1.3u)

- `\fouriervec`: this is a $\vec{}$ accent taken from the Fourier font; the `fourier` package need not be loaded. Active only if option `fouriervec`.
- `\pmvec`: this provides a poor man $\vec{}$ accent command, for upright letters. It uses the right arrow. Does not change size in subscripts and exponents.

new description: • `\Mathnormal`, `\Mathrm`, `\Mathbf`, `\Mathit`, `\Mathsf`, `\Mathtt`: they use the (1.3za)

`mathastext`-ified fonts. By default, `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf`, `\mathtt` are redefined to map to these new commands using the `mathastext` fonts. The option `defaultalphabets` tells to keep them with their original meanings. Alternatively the original commands can be saved under other names before loading `mathastext`: the underlying architecture is not deleted by the package, and aliases defined before loading `mathastext` will work as expected.

- `\mathnormalbold`: a bold version of `\mathnormal`, i.e. picks up the math alphabet used for ascii letters as mathematical variables, but in a bold weight. When the package typesets such letters in the same shape as for operator names (i.e. neither `italic` option nor the `\MTlettershape` command have been used) the output is as the one of `\mathbf`.

This command is also made available under `subdued` option in the “normal” and “bold” math versions, as L^AT_EX does not define it a priori, contrarily to `\mathbf` and other math alphabet commands.

- `\mathgreekup`: math alphabet, only available under `LGRgreek` (or `LGRgreeks`) (1.3x) option, which gives access to ‘upright’ Greek letters (picked up from a font available in LGR-encoding). Note that the package also defines `\alphaup`, `\piup`, `\dots` mathematical character tokens, see [subsection 1.7.3](#). What “up” shape really means may be math version dependent. It is configurable in the preamble via re-defining `\MTgreekupdefault` and then declaring the math version via `\Mathastext` (with optional argument if for a math version other than the “normal” one), or `\MTDeclareVersion`. The font used is also math version dependent: it is the one which was similarly configured via usage of `\MTgreekfont` prior to the `\Mathastext` or `\MTDeclareVersion` step. In absence of any such configuration in the preamble, it will be (in all math versions) the family default at time of loading the package (which thus has then to be available in LGR encoding; it is not a problem if the family default has no LGR support as long as suitable usage of `\MTgreekfont` later on configures a suitable font).

Also `\mathgreekupbold`. (1.3za)

These math alphabets are also available under `subdued` option in the “normal” and “bold” math versions, as L^AT_EX does not (a priori) define analog ones, so `mathastext` has no reason not to

⁷¹The horizontal skips for letter `h` from `\MTsetmathskips` are ignored for `\hbar`. (1.3u)

⁷²The `\hbar` redefinition is canceled in normal and bold math versions under the `subdued` option. (1.3u)

leave them live. Note though that `\mathgreekup{\pi}` will work only if the original `\pi` is of “variable family type” which is not the case except if some math package handling Greek was used, but then why load `mathastext` with option `LGRgreek`?

But you can use `\mathgreekup{p}` as the slot number of `p` in the \LaTeX font for mathematical letters is the same as the slot number of π in LGR encoding.

Or, use rather `\piup` because it is not undefined by `mathastext` in `subdued` normal mode, as \LaTeX has no a priori definition for it. Or use (but why?) `\mathgreekup{\piit}`.

The LGR font family used will be the latest one configured by `\MTgreekfont` usage followed by `\Mathastext` (*without* optional argument) in the preamble which is what is needed to modify the non-subdued aspects of subdued “normal” math; if no such configuration was done, the font family will be the family default found at time of loading the package.

Worse: Δ is per \LaTeX default of variable family type but its slot number in its assigned font is not at all the one of the LGR encoding, so `\mathgreekupbold{\Delta}` will give some unrelated glyph. This is because `mathastext` restores the pristine `\Delta` in `subdued` normal mode to its original meaning. But it keeps its own defined `\Deltaup` and `\Deltait`, so you can use `\mathgreekupbold{\Deltaup}` for example. Or `\mathgreekupbold{D}` as the mathematical letter `D` slot number in \LaTeX is also the one of Δ in LGR encoding.

I am sorry for such lengthy explanations, but this is to comment on why `mathastext` keeps also in `subdued` normal math some of its Greek related functionality, if option `LGRgreek` was used. Most `mathastext` users will not use the `subdued` option anyhow.

- `\mathgreekit`: math alphabet, only available under `LGRgreek` (or `LGRgreeks`) (1.3x) option, which gives access to ‘italic’ Greek letters (picked up from a font available in LGR-encoding). The actual shape is configurable via re-defining `\MTgreekit-default` and then redeclaring the math version via `\Mathastext` (with optional argument if for a math version other than the “normal” one), or `\MTDeclareVersion`.

Also `\mathgreekitbold`.

(1.3za)

See the discussion of `\mathgreekup` for some \TeX hacker level information on what happens with `subdued` option in the “normal” (or “bold”) math version.

- `\inodot`, `\jnodot`: the corresponding glyphs in the `mathastext`-ified font for use in math mode. By default, `\imath` and `\jmath` are redefined to use them. Since 1.3t, these macros obey the `subdued` regime.
- `\MathEuler`, `\MathEulerBold`: math alphabets to access all the glyphs of the Euler font, if option `eulergreek` (or `eulerdigits` was passed to the package).
- `\MathPSymbol`: math alphabet to access the Symbol font.
- when one of the options `symbolgreek`, `eulergreek`, or `selfGreek` is passed to the package the capital Greek letters which look like their Latin counterparts acquire names: `\Digamma`, `\Alpha`, `\Beta`, `\Epsilon`, `\Zeta`, `\Eta`, `\Iota`, `\Kappa`, `\Mu`, `\Nu`, `\Omicron`, `\Rho`, `\Tau`, `\Chi` (no `\Digamma` for Symbol). Also an `\omicron` control sequence is provided.

- LGR Greek and ‘var’-letters: only the `\varsigma` is available in this encoding, so using for example `\varphi` will load the previous default math font. It might thus be suitable when recompiling already written L^AT_EX sources to add to the preamble `\let\varphi=\phi, \let\ varepsilon=\epsilon`, etc. . . ., in case only the ‘variant’ form of the letter was used in the documents.
- Miscellaneous mathematical symbols from the postscript Symbol font are made available (or replaced) by option `symbolmisc`.⁷³ They are `\prod \prod \sum \Sigma \implies \Rightarrow \impliedby \Leftarrow \iff \iff \shortiff \Leftrightarrow \to \rightarrow \longto \longrightarrow \mapsto \mapsto \longmapsto \longmapsto \aleph \aleph \infty \emptyset \sqrt \nabla \nabla \angle \angle \forall \forall \exists \exists \neg \neg \clubsuit \clubsuit \diamondsuit \diamondsuit \heartsuit \heartsuit \spadesuit \spadesuit \smallint \int \wedge \wedge \vee \vee \cap \cap \cup \cup \bullet \bullet \div \div \otimes \otimes \oplus \oplus \pm \pm \ast \ast \times \times \propto \propto \mid \mid \leq \leq \geq \geq \approx \approx \supset \supset \subset \subset \supseteq \supseteq \subseteq \subseteq \in \in \sim \sim \cong \cong \perp \perp \equiv \equiv \notin \notin \langle \rangle \langle \rangle`. And a `\DotTriangle` \therefore is made available by option `symbolre` (which overwrites `\Re` and `\Im`: \Re, \Im). The `\infty` and `\propto` have these names to leave up to the user the choice to replace (or no) the original (larger) `\infty` and `\propto`.

Regarding the `\prod` and `\sum` commands: they will use the Symbol glyphs $\prod \Sigma$ in inline math, and in display math the Computer Modern ones (or whatever is set up by other packages; here we have the symbols from `txfonts`):

$$\prod \Sigma$$

The package provides `\prodpsy` and `\sumpsy`: if one really wants in all situations the Symbol glyphs, one can do `\let\prod\prodpsy` and `\let\sum\sumpsy`. Also `\MOriginalprod` and `\MOriginalsum` will refer to the `\prod` and `\sum` before redefinition by the package: this is to allow constructs such as `\displaystyle\MOriginalprod` or `\textstyle\MOriginalprod`, because they would not work with the `\prod` and `\sum` as re-defined by the package.

2.2 Commands for expert usage

A few preliminary comments, mainly destined to advanced users aware of some T_EX innards (more extensive explanations are to be found in the code comments).

The timing for actions of `mathastext` falls into three cases:

1. things done during the loading of the package, or delayed to `\AtBeginDocument`,
2. things done as the result of user commands, either in the preamble or in the body of the document,

⁷³option `asterisk` is also required to treat the `*`. Recall from [subsection 1.11](#) that the asterisk in math mode (also when using the control sequence `\ast`) appears then to T_EX to be a composite object.

3. things done everytime math mode is entered.

The second category overlaps with the others, as the (preamble) use of some commands can have either immediate effect or only trigger some actions in `\AtBeginDocument` or perhaps only influence the things done later by `mathastext` each time math mode is entered.

The third category deserves some brief additional comments: it mainly (but not exclusively) regards the “math activation” of characters, and conversely all “math activations” fall into this category. The package re-checks each time math mode is entered if some characters have been made in-between catcode active, or math active, and takes appropriate decisions: one important aspect of this issue is that `babel`’s mechanism for activating character was not, last time I checked, very robust against math active characters. I now checked again (on January 15, 2016) that

```
\documentclass{article}
\usepackage[french]{babel}
\usepackage{mathtools}\mathtoolsset{centercolon}
\begin{document}
$: $
\end{document}
```

creates an infinite loop (see section 1.13 where this was mentioned already, some years ago). Thus `mathastext` has (since 1.2e 2013/01/10) a somewhat elaborate mechanism related to these issues (see the code comments), installed into the list of things done by `TEX` systematically each time it enters math mode. For some legacy reason the package also puts into this list a few other things which could arguably be done elsewhere once and for all. The command `\MTeverymathoff` cancels all actions done by `mathastext`.

2.2.1 Expert commands usable everywhere

- `\MTsetmathskips{<a-z/A-Z>}{<mu glue before>}{<mu glue after>}`: is used to (1.3a) specify extra skips (or rather mu glue) to be inserted in math mode, before and after a letter. The rationale is that standard text fonts used in math mode may sometimes cause glyph (near-) collisions with math symbols, as `TEX` has some implicit expectations on the design of fonts for math letters.

These extra skips around letters are set at their natural width and do not add any stretchability or shrinkability to the math formula as a whole, nor do they result in extra potential break points.

Random (silly) examples:

```
\MTsetmathskips{x}{\medmuskip}{\thickmuskip}
\MTsetmathskips{A}{.5mu}{2.3mu}
```


and the effect: $vw x yz A BC^{vw x yz A BC}$. The effect obeys the usual L^AT_EX scoping rules.

The first argument of `\MTsetmathskips` may be any expandable code giving a letter; this facilitates use of `\MTsetmathskip` in `\@for` loops such as this one:

```
\makeatletter
\@for\@tempa:=a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z\do{%
    \MTsetmathskips{\@tempa}{2mu}{2mu}}%
\makeatother
```

Starting with v1.3i: the extra skips are *not* applied to the letters within the scope of math alphabet commands, or the letters from operator names (pre-defined or user declared).

Note that contrarily to the `\MTexistsskip`, `\MTforallskip`, and `\MTprimeskip` commands described next, these extra skips (which may be specified in the preamble) are not recorded in the definition of the math version (as defined via `\Mathastext` with its optional argument or via `\MTDeclareVersion`). The declared skips hold throughout the document until modified or canceled, independently of math versions (of course, `mathastext` cancels the skips in the normal and bold math versions if package option `subdued` was used).

- `\MTunsetmathskips{⟨a-z/A-Z⟩}`: cancels the skips for that letter (they are not set to 0mu but completely removed).

The argument may be a macro (or any expandable code) expanding to a letter.

- `\MTexistsskip{⟨math glue⟩}`: specifies the amount of skip or more generally glue to put after each \exists math symbol. Indeed, upright letters (or digits for that matter) often appear to be positioned a bit too close to the quantifier: $\exists B$. The package default is to add a 1mu skip (this default is set to zero in the case of *italic*): $\exists B$. One can change the default with the following syntax: `\MTexistsskip{2mu plus 1mu minus 1mu}`, which if used in the preamble and followed with a `\Mathastext` command (or `\MTDeclareVersion`), will be recorded in the definition of this math version (and subsequent ones). One may also use the command at any time in the document. In the case of the option `subdued`, the skip is canceled in the *normal* and *bold* math versions. In the case of the option *italic*, the default skip is set to zero.
- `\MTnormalexists`, `\MTexistsdoesskip`: the latter (done by default if not `subdued`, and also on each use of `\MTversion` in the body of the document) makes it so that \exists takes into account the math glue as specified by `\MTexistsskip`. The former is its opposite. (1.3j)
- `\MTforallskip{⟨math glue⟩}`: the default is to add a .6667mu math skip after each \forall (except with the option *italic* for which the default skip is set to zero). Compare $\forall F$ (has the skip) with $\forall F$ (has no skip). Use this command in the

preamble to set up the skip or glue to be used in the *next to be declared* math versions. In the case of the option `subdued`, the skip is canceled in the *normal* and *bold* math versions. In the case of the option `italic`, the default skip is zero for all math versions. One may use the command at any location in the document.

- `\MTnormalforall`, `\MTforalldoesskip`: the latter (done by default if not `subdued`, and also on each use of `\MTversion` in the body of the document) makes it so that \forall takes into account the math glue as specified by `\MTforall-skip`. The former is its opposite. (1.3j)
- `\MTprimeskip`{ $\langle math glue \rangle$ }: the default is to add a `0.5mu` skip before the derivative glyph, except for the `italic` option. In the case of the option `subdued`, the skip is canceled in the *normal* and *bold* math versions.
- `\MTlowerast`{ $\langle dimen \rangle$ }: a `\raisebox` command is used to lower the text asterisk to produce a reasonable math asterisk. The package uses this command initially with argument `0.3\height`, this will have to be fine-tuned for each given text font but worked out ok with the fonts we tried. Note that the dimension argument will be used also in sub-scripts and sub-sub-scripts, so it is best not to use an absolute dimension.
- `\MTmathoperatorsobeymathxx`, `\MTmathoperatorsdonotobeymathxx`: the former is done by default, it makes operator names obey math alphabets. See also section 1.11. This functionality *does not rely* on “math active characters”. Automatically issued by each `\MTversion`, except under option `subdued` when switching to *normal* or *bold*.
- `\MTcustomgreek`: in case `mathastext` has been loaded with one of its Greek related options, this activates the corresponding customization of Greek letters in math mode. It is issued automatically by the package in the preamble (except if loaded with `subdued` option) and at each switch of math version via `\MTversion` or `\MTversion*` (except for the normal and bold math versions in `subdued` mode). Also available as `\Mathastextcustomgreek`. May be used even inside of math mode. (1.3d)
- `\MTstandardgreek`: in case `mathastext` was loaded with one of the Greek related options this command reverts the customization, it resets the Greek letters to their definitions in force at package loading time. Can be used in the preamble, but is mainly for the document body (may even be used inside math mode ...). Done automatically under the `subdued` option when switching to the normal or bold math version. Also available as `\Mathastextstandardgreek`. (1.3d)

2.2.2 Expert commands which are preamble-only

- `\MTgreekupdefault`: a command with no argument whose expansion specifies, under `LGRgreek` regime, the shape for the ‘up’ Greek control sequences (and for (1.3x)

the no-postfix Greek control sequences under `upgreek` option) in all `mathastext` math versions declared *afterwards* via `\Mathastext` or `\MTDeclareVersion`. The a priori default for this shape is ‘n’ (without the quotes). See [subsubsection 1.7.3](#).

This command can also be defined *prior* to loading the package, as the package itself only does:

```
\providecommand*\MTgreekupdefault{n}
```

- `\MTgreekitdefault`: a command with no argument whose expansion specifies, under `LGRgreek` regime, the shape for the ‘it’ Greek control sequences (and for the no-postfix Greek control sequences under `itgreek` option) in all `mathastext` math versions declared *afterwards* via `\Mathastext` or `\MTDeclareVersion`. The a priori default for this shape is ‘it’ (without the quotes). See [subsubsection 1.7.3](#). (1.3x)

This command can also be defined *prior* to loading the package, as the package itself only does:

```
\providecommand*\MTgreekitdefault{it}
```

2.2.3 Expert commands usable only outside of math mode

They are usable only from outside math mode because they act via turning on or off the execution, each time math mode is entered, of certain macros added by `mathastext` to the `\everymath` and `\everydisplay` token list variables.

- `\MTmathactiveletters`: activates the ‘math activation’ of Latin letters. This is done by the package during loading, except under the `subdued` option. It is again executed in the body at each `\MTversion`, except under the `subdued` option when switching to the *normal* or *bold* math versions.

The letters are made mathematically active⁷⁴ to insert the extra skips as specified by `\MTsetmathskips` (see [section 1.8](#)), and also possibly the italic corrections when using upright fonts (see [section 1.9](#)).

- `\MTmathstandardletters`: cancels the ‘math activation’ of the letters. Must be re-issued after each `\MTversion`, but see `\MTeverymathdefault`.
- `\MTicinmath`: this command is executed by default by `mathastext` except in case of option `subdued` or if the user chosen letter shape is oblique (`it` or `sl`). It tells `mathastext` to add italic corrections after all letters in math mode, except within the scope of math alphabets.

This command and the next ones in this item can be used in the preamble as well as in the body of the document (in case of `subdued` option, using the commands from within the preamble will remain without effect, as the document body will start in the `subdued normal` math version anyhow.) But each `\MTversion` in the

⁷⁴the `mathcode`'s are only modified at the time of execution of `\everymath`, `\everydisplay`.

body will re-emit `\MTicinmath` (in case of non-oblique letter shape), except if the `subdued` option was used and the chosen math version is *normal* or *bold*.

The effect of this and the other commands of this item is local to the group or environment in which it has been issued.

It may theoretically be used from inside math mode, but the included `\MTmathactiveletters` will have an effect only if issued prior to entering math mode.

`\MTnoicinmath`: this command deactivates the package added italic corrections. It can be used inside as well as outside of math mode (or in the preamble of the document).

`\MTICinmath`, `\MTnoICinmath`: these commands activate the italic corrections only for the uppercase letters (but recall that `\MTicinmath` is done by default, thus this will typically have to follow `\MTnoicinmath`.)

`\MTicalsoinmathxx`: this command de-activates the de-activation of the italic corrections inside the arguments to the math alphabet commands. It can be issued inside as well as outside of math mode. Will be effective only if `\MTicinmath` or `\MTICinmath` is in force. To cancel its effect either enclose it in a group or environment or re-issue `\MTicinmath` after it.

- `\MTnormalasterisk`, `\MTactiveasterisk`: the latter will use for `*` and `\ast` the text font asterisk, suitably lowered; the former tells `mathastext` to not modify the L^AT_EX default. Both are no-op without option `asterisk`.
- `\MTeasynonlettersobeymathxx`, `\MTeasynonlettersdonotobeymathxx`: the former is done by default, it makes characters `.`, `/`, `|`, `\`, `#`, `$`, `%`, and `&` (if not excluded by package options) obey math alphabet commands. See also section 1.11. This functionality does *not* make the characters “math active” (but it does modify `\mathcode`’s, naturally).
- `\MTnonlettersobeymathxx`, `\MTnonlettersdonotobeymathxx`: the former will make (except if excluded by relevant package options) `!`, `?`, `,`, `:`, `;`, `+`, `-`, `=`, `(`, `)`, `[`, `]`, `<`, and `>` obey the math alphabet commands (when not used as delimiters). These characters are made “math active”, and each one now expands to two tokens. This makes for example `$a^!$` illegal input and it will have to be coded `$a^{\!}$`. Hence, by default, the package does `\MTnonlettersdonotobeymathxx`.

Under `subdued` option, `\MTnonlettersobeymathxx` effect is of course canceled in the *normal* and *bold* math versions; but please note that when switching back to a non-subdued math version it will be mandatory to issue again `\MTnonlettersobeymathxx` explicitly if its effect is to be re-activated.

In particular, executing `\MTnonlettersobeymathxx` in the preamble or at the start of the document body serves nothing, because the document is in the subdued *normal* math version regime then. It must thus be executed after the first usage of `\MTversion` switching to a non-subdued math version, and again on each successive exit from the *normal* or *bold* math versions.

- `\MTexplicitbracesobeymathxx`: extends an earlier `\MTnonlettersobeymathxx` to also treat `\{` and `\}`. But then `\left\{`, `\right\}` must be coded `\left\lbrace`, `\right\rbrace` rather. There is also `\MTexplicitbracesdonotobeymathxx`.
- `\MTnormalprime`, `\MTprimedoesskip`: the latter (done by default if not subdued, and also on each use of `\MTversion` in the body of the document except for the subdued *normal* and *bold* math version) makes it so that ' takes into account the math glue as specified by `\MTprimeskip`. The former is its opposite. In all cases the right quote ' is a mathematically active character producing ' as is the default in TeX, it is only its meaning which changes to include or not an extra skip. For some (legacy) reason, this change of meaning is done anew by `mathastext` each time math mode is entered. The commands of this item are thus no-op from inside math mode. (1.3j)
- `\MTeverymathdefault`: this hook is executed by `\MTversion{<version_name>}`, except under option subdued when switching to the *normal* or *bold* math versions. Its default meaning is: (1.3j)

```

\MTactiveasterisk % this has no effect without option asterisk
\MTprimedoesskip  % this makes prime glyph obey extra space
\MTeasynonlettersobeymathxx
\MTicinmath       % this does \MTmathactiveletters, hence also skips from
                  % \MTsetmathskips are obeyed.
\MTfixfonts       % only operant under LuaLaTeX.

```

Notice that under subdued option, switching to the *normal* or *bold* version does `\MTeverymathoff` which includes `\MTnonlettersdonotobeymathxx`.

The default `\MTeverymathdefault` which is issued when going back to a non-*normal* or *bold* math version doesn't do `\MTnonlettersobeymathxx`: thus it is up to the user to correct this if needed (no issue without subdued option).

Notice also that `\MTversion{<version_name>}`, except for *normal* or *bold* if subdued does `\MTforalldoesskip` and `\MTexistsdoesskip`, which are not included in `\MTeverymathdefault` actions as they are not related to `\everymath` and `\everydisplay`.
- `\MTeverymathoff`: does `\MTnormalasterisk`, `\MTnormalprime`, `\MTnonlettersdonotobeymathxx`, `\MTeasynonlettersdonotobeymathxx`, `\MTmathstandardletters` and `\MTdonotfixfonts`. (1.3j)

The commands `\url/\nolinkurl` of package `hyperref` and `url` from `url.sty` (which use math mode under the hood) are patched by `mathastext` to do `\MTeverymathoff` automatically: this is needed because `mathastext` modifies anew some mathcodes *each time math mode is entered*, hence may overwrite to some extent the specific preparation done by `{url,hyperref}.sty`. (1.3i)

Automatically done by `\MTversion` under option subdued if switching to the *normal* or *bold* math versions; and `\MTversion` then does also `\MTnormalexists` and `\MTnormalforall`.
- `\MTfixfonts`: this is operant only under LuaLaTeX. It has the effect that each time math mode is entered macro `\MTfixmathfonts` will be executed. The latter forces so-called base mode for the used text font in math mode, in an effort to (only partially, see code comments) fix the fact that OpenType features such as Lining Figures were in some (1.3o)

cases not being applied in math mode when one uses text fonts there (text fonts are declared by `LuaTeX+luaotfload` to use `node` mode, which is non-functional in math.) It is invoked automatically by the package (except for `normal` and `bold` math versions under `subdued` option), and in normal situations, there is no reason to use it directly.

- `\MTdonotfixfonts`: cancels the job of `\MTfixfonts`. Done automatically in `subdued` (1.3p) mode when in the `normal` or `bold` math version; in normal contexts, there is no reason to use this command. Only operant under `LuaLaTeX`.

2.2.4 Expert commands usable only in math mode

- `\MTfixmathfonts`: this used to be an internal package macro but it is given a public name at 1.3p because I discovered that `$. \hbox{\mathversion{foo}}$. $}$. $` causes an issue and one needs to invoke again `\MTfixmathfonts` *after* the `\hbox`, for some reason. To be used *only* under `LuaLaTeX` and only for such rare cases where it may be needed. (1.3p)

3 Package options

3.1 Summary of main options

italic: tells `mathastext` to typeset the ascii letters in math using italic shape; indeed, its legacy historical default is to typeset them in roman (upright) shape.

frenchmath: lowercase ascii letters in italic shape, uppercase in upright shape. Also lets the Greek letters, if the latter are under `mathastext` influence, be upright, i.e. also the lowercase ones.

subdued: tells `mathastext` to not change the default fonts or the math alphabets for the normal and bold math versions. The `mathastext`-ification activates only after `\MTversion{<version_name>}` usage in the document body, where the `<version_name>` was declared as an `mathastext` enriched math version in the preamble via `\Mathastext[<version_name>]` or akin package commands.

LGRgreek, **eulergreek**, **symbolgreek**: the Greek letters will be taken, respectively from the text font itself (which must be available in LGR encoding), or respectively the Euler or Symbol font.

symbolmax: all characters other than letters and digits, are taken from the Symbol font. This option also makes a number of further glyphs available, such as some basic mathematical arrows, and the sum and product signs. For documents with very simple needs in mathematical symbols, `mathastext` with option `symbolmax` may give in the end a PDF file size quite smaller than the one one would get without the package.⁷⁵

⁷⁵It is even better if compiled via `latex+dvipdfmx`.

defaultmathsizes: prevents **mathastext** from setting up, as it does per default, larger subscripts and superscripts in math mode, and from copying code from the **moresize** package⁷⁶ in order to redefine `\Huge` and define a `\HUGE` command.

3.2 Complete list of options

Some items are described succinctly as more developed descriptions were given earlier. They may sometimes simplify by omission and not consider all possible configurations, particularly those resulting from usage of the package commands in the preamble to configure math versions.

Note that this list is not in alphabetical order, the items are grouped roughly by themes. So, objectively, the best for the diligent reader is to read thoroughly all descriptions.

- **basic**: only **mathastextify** letters and digits.
- **subdued**: acts in a subdued way, which means that the L^AT_EX “normal” (default) and “bold” (triggered by `\boldmath` or `\mathversion{bold}`, undone by `\unboldmath` or on exit from a scope limiting context such as an environment) math versions are left (not quite: check [subsection 1.4.4](#) for specifics) unchanged and the **mathastext** action is triggered only when switching via `\MTversion{<version_name>}` (or its starred variant) in the document body to a version previously defined in the preamble via `\Mathastext[<version_name>]` (or alternative declarative interface such as `\MTDeclareVersion`).⁷⁷
- **italic**: let the Latin letters (both lowercase and uppercase) use the italic shape (`\itdefault`) in math mode. If the package handles Greek letters, also lowercase (but not uppercase) Greek letters will use this a priori italic shape except if some other option such as **upgreek** was used.⁷⁸
- **frenchmath**: configures the lowercase Latin letters to use italic shape (`\itdefault`), and uppercase Latin letters to be in same shape as for digits and operator names (i.e. a priori `\shapedefault`).

If the package handles Greek letters both lowercase (if under control of **mathastext**, i.e. not for **selfGreek**) and uppercase Greek letters will use the same shape as operator names, except if some other option such as **itgreek** was used.⁷⁹

⁷⁶Christian CORNELSSEN, *Allows font sizes up to 35.83pt*, <https://ctan.org/pkg/moresize>.

⁷⁷Under this option `\MTversion{normal}` and `\MTversion{bold}` execute automatically `\MTmathoperatorsdonotobeymathxx`, `\MTteasyonlettersdonotobeymathxx`, `\MTnonlettersdonotobeymathxx`, `\MTmathstandardletters`.

⁷⁸Since 1.3x, in presence of the **LGRgreek** option in addition to **italic**, the `\MTgreekitdefault` shape is then used for lowercase Greek letters and `\MTgreekupdefault` for uppercase.

⁷⁹Under **LGRgreek** and since 1.3x, the `\MTgreekupdefault` is used for Greek letters if no other option such as **itgreek** was employed.

This configuration (i.e. that uppercase Latin letters will be in the same shape as the one for digits and operator names) is **not** undone in the `subdued` “normal” and “bold” math versions. It holds throughout the document, but math versions declared by `mathastext` may use `\MTshape` and `\MTlettershape` to, in effect, obtain whatever configuration is desired.

As a bonus, note that doing

```
\usepackage[basic,subdued,frenchmath]{mathastext}
```

provides a simple manner to obtain the expected shapes of Latin letters in French mathematical typography, in an arbitrary math font configuration from other packages, in case those packages do not provide an option to achieve this.

But, even if `mathastext` is used via `LGRgreek` to configure Greek letters, on the other hand the control sequences for Greek letters are all really restored to their defaults (or whatever was configured by other packages loaded prior to `mathastext`) in the subdued “normal” math version, which limitates the usefulness of the previous paragraph.

On the bright side, the `\alphaup`, `\alphait`, ..., control sequences will however be with their `mathastext` meaning, see `LGRgreek` for more information.

It is *not* possible (except of course if one is ready to do some low-level \TeX coding to re-execute where needed in the document body a few lines of the package internals with appropriate modifications; I said \TeX , not \LaTeX , as the latter is very much decided to make impossible any kind of math configuration change at this level if not in the preamble) to achieve a “French math” style only in some math versions and not in others. The reason why is that to achieve distinct shapes for uppercase versus lowercase Latin letters, the uppercase letters are assigned internally to the font (which can change from math version to math version) used for operator names. One can still make them slanted using `\MTshape`, but this will also slant the digits, as they are picked from the same font. On the other hand if we do not use the `frenchmath` option, both uppercase and lowercase Latin letters are always assigned to the same font, so no math version can give them separate distinct shapes. For a small demo though, one can naturally painstakingly use either the `\mathrm` or `\mathnormal` alphabet commands to obtain, say under the `italic` option and no additional configuration, respectively the up shape and the italic shape.

None of the `frenchmath`, `frenchmath*`, and `frenchmath+` options bear any direct connection with the `frenchmath` package by Antoine MISSIER (this is in contrast with the fact that the `decimalcomma` option is directly related with the `decimalcomma` package by the same author as it tells `mathastext` to require it). But see [subsubsection 1.5.6](#) for important information about the utility of `frenchmath*` if the two packages are to be used concurrently.

- new behavior** • **defaultalphabets**: `mathastext` always defines `\Mathnormal`, `\Mathrm`, `\Mathbf` etc... to refer to the `mathastext`-ified text fonts, and redefines the math alphabets `\mathrm`, `\mathit`, `\mathtt` etc... (but not `\mathcal` of course) to use them. To avoid the remapping and keep the `\mathrm` et al. to refer to the non `mathastext`-ified fonts, use this option. The `\Mathnormal` et al. commands with an initial uppercase will always be available whether or not this option is made use of. (1.3za)

Prior to 1.3za (and since 1.15f), this option also prevented the package to declare the `\Mathnormal` et al. and `\mathnormalbold` commands. In this context, recall that the dreaded “too many math alphabets” error can only occur on *use* in the document of too many of such commands, and not at the time of their declarations. The author’s notes from time of 1.15f release (2012/10/25) only say that it may not be “useful” to package user to have both (for example)

`\mathrm` and `\Mathrm`, which sounds weird if they are to acquire distinct meanings. So since 1.3za both will exist. In the default package configuration `\mathrm` is configured to expand to `\Mathrm` (with some extra behavior under `LGRgreek+`), and with this option or the `defaultrm` option `\mathrm` is kept with its original meaning (and the `LGRgreek+` extras do not work).

- changed: • `defaultnormal`, `defaultrm`, `defaultbf`, `defaultit`, `defaultsf`, `defaultttt`: tell `mathas-text` to not set up, respectively, the `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf`, and `\mathtt` commands to use the `mathastext`-ified font which are accessible always via `\Mathnormal`, `\Mathrm`, `\Mathbf`, `\Mathit`, etc... (1.3za)

Prior to 1.3za these options also prevented the creation of the corresponding `mathastext` command with an uppercased initial.

- `nccomma`: it triggers the loading of the `nccomma` package⁸⁰ and configures `mathastext` for compatibility (this is canceled if `nopunctuation` option is used, or `basic` as it implies it). *Note that `mathastext` has NO auto-detection mechanism of `nccomma`, the correct way is to use the eponymous option.* (1.3x)

The effect of the `nccomma` package will apply to the entire document body, even to portions using the *normal* or *bold* math versions with `mathastext` having been loaded with the `subdued` option. Also, in case of usage of package `babel` with `french` option, the effect of `nccomma` will also apply to those parts of the document using another language than French.⁸¹

- `decimalcomma`: it triggers the loading of the `decimalcomma` package⁸². The same remarks apply as for the `nccomma` option. In particular *note that `mathastext` has NO auto-detection mechanism of `decimalcomma`, the correct way is to use the eponymous option.* (1.3zb)

- `binarysemicolon`: sets (except if `nopunctuation` is used) the semi-colon to let \TeX use spacing of binary type, not punctuation type, around the semi-colon (it is often used in French mathematical typesetting as separator in interval denotations, when the extremities are decimal numbers, as the comma is used as decimal separator). (1.3x)

The effect applies to all math versions, even the *normal* and *bold* math versions with `mathastext` having been loaded with the `subdued` option.

- CHANGED! • `frenchmath*`: does all three of `frenchmath`, `decimalcomma` and `binarysemicolon`. (1.3zb)

Prior to 1.3zb, this option did what is now available via `frenchmath+`. The 1.3zb change was made as a follow-up consecutive to the 2.7 release `frenchmath`. Indeed this option as explained

⁸⁰Alexander I. ROZHENKO, *Use comma as decimal separator in mathematics*, <https://ctan.org/pkg/nccomma>.

⁸¹There is a 'feature' of `babel-french` that the effect of package `nccomma` is canceled if one switches from French to English; and switching back to French does not reenact it. For background on this issue see <https://github.com/latex3/babel/issues/190>.

This does not apply to `decimalcomma` 1.3 or later.

⁸²Antoine MISSIER, *Comma for decimal numbers*, <https://ctan.org/pkg/decimalcomma>.

in [subsection 1.5.6](#) is provided as a compatibility layer with `frenchmath`, and it was mandatory to modify its meaning to refer to package `decimalcomma`, not `nccomma`, consecutive to the internal change of `frenchmath` at its 2.7 release to use `decimalcomma`.

- `frenchmath+`: does all three of `frenchmath`, `nccomma` and `binarysemicolon`. (1.3zb)
This is what used to be called `frenchmath*` prior to 1.3zb.
- `endash`, `emdash`: use the text font en-dash (–) or even the em-dash (—, but this seems crazy) for the minus sign rather than -. `endash` option is default for the package.
- `unicodeminus`: use the MINUS SIGN U+2212 (requires `fontspec`.) Or, in the form `unicodeminus=HHHH` with four *uppercased* hexadecimal digits: use the U+HHHH code point. As `noendash` really means “use the hyphen from the text font”, `unicodeminus` remains without effect under it, or, naturally, under `nominus`. Without this option, `mathastext` uses the EN DASH U+2013 by default for OpenType fonts. (1.3q)
- `asterisk`: use the text font (or the Symbol font) asterisk in math mode.
- `nohbar`: prevents `mathastext` from defining its own `\hbar`.
- `noendash`: the minus sign will be the - from the text font, not the en-dash –.
- `nolessnomore`: besides `!?`, `..;`, `+–=()`, `[]/`, `#$%&` `mathastext` treats also `<>`, `{}` and `\`. Use this option to let it not do it. This is the default in case of OT1-encoding.
- further excluding options: `noexclam !?`, `nopunctuation ,.;`, `noplus`, `nominus`, `no-plusnominus +–`, `noequal =`, `noparenthesis ()`, `[]/`, `nospecials # $ % &` and `nodigits`.
- `alldelims`: true by default, means that the characters excluded by `nolessnomore` are treated. Use this option in case of a mono-width OT1-encoded font.
- `nosmalldelims`: this prevents `mathastext` from trying to pick up in the text font the ‘small variants’ of some math delimiters; it only affects what happens when a character such as a left parenthesis (or [is used as a delimiter, and in the event that \TeX has chosen the smallest sized variant. This has no impact on what happens when they are not used as delimiters: then, and if not disabled by the corresponding options, these characters are always picked up from the text font.⁸³
- `symbolgreek`, `symboldigits`: to let Greek letters (digits) use the Symbol font.

⁸³in this very special situation of option `nosmalldelims`, the braces are an exception to this rule and they require both of `\MTnonlettersobeymathxx` and `\MTextexplicitbracesobeymathxx` for being picked up from the text font when not used as delimiters.

- **symbolre**: replaces `\Re` and `\Im` by the Symbol glyphs \Re, \Im and defines a `\Dot-Triangle` command (`\dot{\triangle}`).
- **symbolmisc**: takes quite a few glyphs, including logical arrows, product and sum signs from Symbol. They are listed *supra*. Doing `\renewcommand{\int}{\smallint}` will maximize even more the use of the Symbol font.
- **symboldelimiters**: the characters apart from letters and digits will be taken from the Symbol font.
- **symbol**: combines **symbolgreek**, **symbolre**, and **symbolmisc**.
- **symbolmax**: combines **symbol** and **symboldelimiters**.
- **eulergreek**, **eulerdigits**: to let Greek letters (digits) use the Euler font.
- **LGRgreek**: this configures the Greek letters in math mode to use the text font (i.e. a priori the font which was default at time of loading the package) in LGR-encoding. The command `\MTgreekfont` can be used to set a specific (LGR-encoded) font family. Each use of `\MTgreekfont` must be followed at some point by a `\Mathastext` or `\Mathastext[\langle version_name \rangle]` to be effective. Any subsequent math version declaration will be influenced by it until `\MTgreekfont` is used again to configure another font for Greek letters.⁸⁴

If `\MTgreekfont` is never used the font family for Greek under option **LGRgreek** will be, in all math versions except under **subdued** for the “normal” and “bold”, the family which was the default at time of loading the package. You must use `\MTgreekfont` to change it.

See further on this topic the **upgreek**, **itgreek**, **upGreek** and **itGreek** options as well as the `\MTupgreek`, `\MTitgreek`, `\MTupGreek` and `\MTitGreek` commands.

It is up to the user to ascertain that the font family is indeed available in the LGR encoding; if it is not, only at time of the first math mode typesetting will \LaTeX issue warnings such as this one:

```
Font shape `LGR/ptm/m/n' undefined
using `LGR/cmr/m/n' instead on input line 28
```

The **LGRgreek** option also triggers pre-definition of Greek character tokens such as `\alphaup` or `\betait`, see [subsection 1.7.3](#) for the explanations.

Although under **subdued** option **mathastext** restores Latin (but see **frenchmath**) and Greek letters in the “normal” and “bold” math versions it still under **LGRgreek** option keeps in these “subdued” math versions the package declared `\alphaup`, `\alphait`, ..., and the associated `\mathgreekup` and `\mathgreekit` commands to access the underlying fonts, and also since 1.3za `\mathgreekupbold` and `\mathgreekitbold`.

The font used by these math alphabet commands in the subdued “normal” and “bold” is either the one in LGR encoding which was the family default at time of loading the package or the one

⁸⁴You can check the documentation of the <https://ctan.org/pkg/lgrmath> package for how to find out systematically which fonts are available on your system in LGR encoding.

configured last by `\MTgreekfont` when the command `\Mathastext` (without optional argument) was used in the preamble.

1.3za fixes here a bug which froze the target font to be the one at time of loading the package: this bug applied (only) to the subdued “normal” and “bold” math versions and was not readily visible as there is a priori no reason to use in these subdued math versions these `mathastext`-provided Greek font alphabets.

- **LGRgreeks**: each declared math version will be supposed to be with a font which is also available in LGR-encoding. This is a shortcut to using `\MTgreekfont` systematically to keep in sync in all declared math versions the font for Greek with the font for Latin letters. Please note that macro `\MTgreekfont` becomes then inoperant, and if you need one math version without this Latin-Greek synching, you will have to use rather `LGRgreek` and then `\MTgreekfont` manually appropriately.
- **LGRgreek+** and **LGRgreeks+**: they extend respectively `LGRgreek` or `LGRgreeks` (1.3za) to let Greek letters control sequences when in the scope of `\mathrm`, `\mathit`, and `\mathbf` behave as would be expected by LaTeX users who have not read `fntguide.pdf` or any other L^AT_EX documentation but have used `unicode-math`. See [subsection 1.7.5](#) for details.
- **selfGreek**: this is for a font which is also available in OT1-encoding and contains the glyphs for the default eleven capital Greek letters.
This option should have been named `OT1Greek` as it bears about the same relation with OT1 encoding (for eleven capital Greek letters) as `LGRgreek` does with the LGR encoding (for the complete no-diacritics Greek alphabet).
- **selfGreeks**: each declared math version will be supposed to be with a font with the eleven capital Greek letters in its OT1-encoded version.
- **upgreek**, **itgreek**: options to tell `mathastext` to use `\MTgreekupdefault` or `\MTgreekitdefault` for the lowercase and uppercase Greek letters shape. These two commands can be defined prior to loading the package. This option is operant only under the `LGRgreek(s)` or `selfGreek(s)` options.
- **upGreek**, **itGreek**: influence only uppercase Greek.
- **mathaccents**: use the text font also for the math accents. As in vanilla L^AT_EX, they are taken from the font for the digits and `\log`-like names. Obey the alphabet changing commands.
- **unimathaccents**: extends `mathaccents` to OpenType fonts. Gave bad results in my brief testing. (1.3u)
- **defaultmath**: do not overwrite `\imath` and `\jmath` to use `\inodot` and `\jnodot`.
- **defaultmathsizes**: do not change the L^AT_EX defaults for the sizes of exponents and subscripts.

- `fouriervec`: provides a `\fouriervec` command. The user can then add in the preamble `\let\vec=\fouriervec`. There is also always available a “poor man” vec accent `\pmvec` for upright letters.

Thanks to Kevin KLEMENT, Tariq PERWEZ and Ricard TORRES for sending bug reports and feature requests when the first version of the package was issued.

Numerous examples will be found there:

<http://jf.burnol.free.fr/mathastext.html>

<http://jf.burnol.free.fr/showcase.html>

4 Change log

1.3zb [2023/12/29]

- * Update to the frenchmath* option to maintain compatibility with the [frenchmath](<https://ctan.org/pkg/frenchmath>) package whose release 2.7 (2023/12/23) has replaced the nccomma package by the decimalcomma package.

- * The frenchmath+ option holds the former meaning of frenchmath*.

- * Option decimalcomma to load the eponymous package by Antoine Missier. This is tacitly done by frenchmath*.

- * No more messages sent to the console output during loading, only info messages going into the log, and using (more or less) the official LaTeX interface: after close to 13 years of development of this package it was perhaps finally the time to do it.

- * Documentation improvements. Close to 13 years after the birth of the package, and as it nowadays rarely wakes up from dormancy, this was almost last chance to try to improve a few things.

1.3za [2023/12/20]

- * Under LGRgreek and LGRgreeks options, new math alphabets $\backslash\text{mathgreekupbold}$ and $\backslash\text{mathgreekitbold}$.

- * New options LGRgreek+ and LGRgreeks+. Thanks to Holger Gerhardt for feature request and code ideas. Please find and read the relevant documentation in the PDF.

- * The meaning of defaultalphabets and related individual options such as defaultbf has been modified (reverted to pre 1.15f release): even under these options, the package always creates $\backslash\text{mathnormalbold}$, $\backslash\text{Mathnormal}$, $\backslash\text{Mathrm}$, $\backslash\text{Mathbf}$ etc..., commands. This may break documents which used these options in order to reserve these command names. This was done with some hesitancy, but for the sake of internal logical coherence.

- * Fix an obscure bug with no real consequences regarding interaction of subdug with LGRgreek and $\backslash\text{MTgreekfont}$. See the LGRgreek documentation in the complete list of options for details.

- * Fix long-standing hyperlink problems in the

documentation: blue color words should now all be functioning hyperlinks.

1.3z [2023/09/01]

Fix 1.3y regression which broke selfGreek option due to internal renamings. Thanks to Stephan Korell for report.

1.3y [2022/11/04]

(the 1.3x had an annoying documentation bug, and had already been pushed to CTAN, hence the version increase to 1.3y)

- * mathastext now requires the $\backslash\text{expanded}$ primitive (which is available with all major engines since TeXLive 2019).

- * Revisit parts of the documentation (mainly the Examples, and the section on Greek letters) and shuffle the other parts to surely improve things. Mention the [mathfont](<https://ctan.org/pkg/mathfont>) and [frenchmath](<https://ctan.org/pkg/frenchmath>) packages.

- * Add the nccomma option which loads the [nccomma](<https://ctan.org/pkg/nccomma>) package to allow the comma as decimal separator.

- * Add the binarysemicolon option to let the semi-colon be of type $\backslash\text{mathbin}$, not $\backslash\text{mathpunct}$.

- * Add the frenchmath* option which does all three of frenchmath, nccomma and binarysemicolon.

- * Under the LGRgreek and LGRgreeks options only:

- make available upright and italic Greek letters in math mode via $\backslash\text{alphaup}$, $\backslash\text{alphait}$, ... control sequences, in addition to those not using such postfixed-names.

- add $\backslash\text{mathgreekup}$ and $\backslash\text{mathgreekit}$ math alphabets.

- add $\backslash\text{MTgreekupdefault}$ and $\backslash\text{MTgreekitdefault}$. The former replaces $\backslash\text{updefault}$ which was used in some places and since LaTeX 2020-02-02 caused systematic Font Warnings about the substitution of up by n.

These new features required an extensive internal refactoring which is expected to not induce changes to most existing documents. But it may induce changes to those using some unusual configuration in the preamble, as made possible via the

package macros; this can apply only to documents authored by those few people who actually read the documentation. For full details make sure to read the PDF documentation about this change.

- * Fix "\Digamma under LGRgreek option uses the shape for lowercase not uppercase Greek".

- * Fix some incongruities in log messages related to Greek letters and emitted during math version creation in the preamble.

1.3w [2019/11/16]

- * LaTeX 2019-10-01 release (up to patch level 3 inclusive) together with amsmath conspired :-)) to break mathastext, in connexion with math accents. This has been fixed upstream, but I am releasing nevertheless a hot fix to this <https://github.com/latex3/latex2e/issues/216> issue (this is compatible with future LaTeX releases).

- * Fix: the \hbar is originally a robust command but becomes a \mathchardef token if (e.g.) amsfonts is loaded and then with recent LaTeX \hbar<space> is made undefined and mathastext definition of it remained without effect. The \mathastext own \hbar is now defined \protected.

- * Fix: option noendash (or symboldelimiters which implies it) caused (since 1.3u) a bug under Unicode engines when setting up the minus sign.

- * Version names declared via the optional argument of \Mathastext or as first argument of \MTDeclareVersion must not be normal or bold. Enforce that! (this was marked as a bug to fix since 2012/10/24...)

1.3v [2019/09/19]

- * LaTeX 2019-10-01 release has made more math macros robust. This applies in particular to the math accents and to the \hbar. This required for mathastext to adapt. Also \leftarrowfill and \rightarrowfill are now defined robust by the kernel, hence mathastext does the same. These changes are dropped if mathastext detects an older LaTeX format.

- * These LaTeX kernel changes motivated an examination of some redefinitions done (optionally) by mathastext:

- The user math alphabet macros got redefined as expanding to some other (robust) math alphabet macros, but were not robust in the strict sense. This does cause some issues for moving arguments in the context of multiple math versions, hence it

was a bug. The special behaviour of the math alphabet commands (they redefine themselves and other macros on first use) makes is somewhat problematic for mathastext to keep them updated across math versions and at the same time strictly LaTeX2e robust. Thus mathastext now requires the e-TeX primitive \protected and uses it for the definitions of the user level math alphabet macros.

- There are a number of \mathchardef tokens which (under certain options and/or configuration via the package user interface), mathastext redefines as macros. These macros cause no issue in moving arguments (they are not "fragile"), still it is probably better if they expand only at the time of typesetting. To this effect they are now also \protected: \exists, \forall, \colon, \setminus, \mid, \prod, \sum, \imath, \jmath.

- The macro \vert (which expands to a \delimiter) is now defined robust by LaTeX. Its mathastext redefinition is a \protected one rather.

- The \{ and \} (which get redefined only under \MTexplicitbracesobeymathxx regime) are now strictly robust in the LaTeX2e sense (formerly they were \let to some robust macros, and this did not make them strictly LaTeX2e-robust entities).

- * The various changes in mathastext described in the previous item apply independently of the LaTeX release version. The LaTeX format itself requires the e-TeX extensions since 2015.

1.3u [2019/08/20]

- * new feature: the initial release dealt with only one font, and although shortly thereafter the 1.11 version added support for extended math versions, it was documented that some font-dependent setup (minus as endash, dotless i and j, hbar, math accents) was done only once. This release makes the relevant characters font encoding savvy in each mathastext-extended math version. Thus, they should render correctly even with multiple math versions using fonts with varying encodings.

This reinforces importance of using \MTversion and not the LaTeX \mathversion when switching to a new math version (which got declared via the package interface). The implementation is compatible with Unicode engines and mixed usage of TU encoding (OpenType fonts) with traditional 8bits TeX font encodings. For all engines, all used (8bits) encodings must have been passed as options to the fontenc package.

Thanks to Falk Hanisch for feature request and code suggestions.

* new option `unimathaccents`: this adds to option `mathaccents` the demand to use the text font accents for OpenType fonts in math mode via the `\Umathaccent` primitive. Indeed, as my testing showed that this gave non-satisfactory results both with XeTeX and LuaTeX regarding the horizontal placement of the accents, the main option `mathaccents` acts only on 8bits encoded fonts.

* bugfix: the `\Mathastext` without optional argument forgot to repeat some font-encoding dependent initialization set-up done originally during package loading.

* bugfix: under the subdued option macros `\MTmathactiveletters` or `\MTnonlettersobey-mathxx` now act like no-ops if issued explicitly while in the normal or bold math version. Formerly, this was not the case and could cause bugs such as a disappearing minus sign in math mode.

* bugfix: the letter `h` used in the `\hbar` obeyed the extra skips as set-up by `\MTsetmathskips`, badly interfering with the horizontal positioning of the bar accent. They are now ignored (as well as the added italic correction).

1.3t [2018/08/22]

* bugfix: the 1.3s bugfix about subdued compatibility with `fontspec` was deficient.

* bugfix: very old (v1.2, 2012/12/20) bug causing low-level TeX error during package loading (with `pdflatex`) when setting up the math minus sign to be the text font endash character, in cases with `\encodingdefault` other than `OT1`, `T1` or `LY1`, e.g. something like `T2A`.

* `\imath` and `\jmath` obey the subdued regime. And the minus sign is now handled especially to ensure perfect compatibility with the subdued option.

* breaking change: `mathastext` does not redefine anymore `\i` and `\j` to let them be usable both in text and math mode.

1.3s [2018/08/21]

* fix to an issue with subdued option in a `fontspec` context.

1.3r [2016/11/06]

* documentation tweaks.

1.3q [2016/10/31]

* new option `unicodeminus`.

* the Recent Changes section of the documentation has been removed as it was a duplicate of information available in the Change Log.

* some other changes in the documentation, in particular the use of straight quotes in verbatim.

1.3p [2016/05/13]

* bugfix: release 1.3n had forgotten to activate by default its new customization of the `amsmath` macro `\newmcodes@` (it was done from using `\MTversion` in the document body but not by default at start of body.)

* public name `\MTfixmathfonts` for a 1.3o macro.

1.3o [2016/05/03]

* `mathastext` fixes an issue related to a feature of LuaLaTeX and `luaotfload` that OpenType fonts are declared in one of two modes: `node` and `base`, and only the latter is functional in math mode. But by default text fonts are declared in mode `node`. Thus `mathastext` now intervenes to make it so that the font it declares in math mode will use mode `base`. This fixes issues with for example old style figures being used while the text font used lining figures (or vice versa, depending on the font). But see the code comments for more.

1.3n [2016/04/22]

* at long last, `mathastext` takes care properly of annoying and perplexing `amsmath`'s `\newmcodes@`. The very recent change in `amsopn.sty` finally made it compatible with Unicode engines, but anyhow, `mathastext` must do its own patch to use the correct font. All of this taking into account the various options passed to the package. Lots of trouble for a tiny thing.

1.3m [2016/04/02]

* minor code maintenance before annual TL freeze.

1.3l [2016/01/29]

* compatibility with `fontspec`'s upcoming switch from `EU1/EU2` to `TU` common to both Unicode engines.

1.3k [2016/01/24]

* typos fixed in the documentation. In particular, the README link to the package homepage had remained broken from day one of the package releases: `mathastext.html` therein was misspelled

as mathstext.html ! (but the pdf documentation had the correct link; as well as the CTAN catalogue).

1.3j [2016/01/15]

- * renamed and modified recent 1.3i's `\MTactivemathoff` into `\MTeverymathoff`. Added `\MTeverymathdefault`.

- * subdued mode is a bit stronger: also the asterisk reverts to the default (if it was modified due to option asterisk), the added extra `\mskip`'s (useful with upright fonts) for `'`, `\exists`, and `\forall` are suppressed rather than re-configured to use `Omu`. Related new commands `\MTexistsdoesskip`, `\MTforalldoesskip`, `\MTprimedoesskip`, `\MTnormalexists`, `\MTnormalforall`, `\MTnormalprime`.

- * the toggle for using mathematically active letters is only emitted once during package loading; the `\Mathastext` command does not do it anymore; the use in the preamble of `\MTmathstandardletters`, or `\MTnoicinmath` and related commands is not overruled by later use of `\Mathastext`.

- * quite a few documentation improvements and rewrites, particularly in the description of commands which are related to the modifications of mathcodes (mainly for math activation of characters or letters) as done by `mathastext` at `\everymath` or `\everydisplay`.

1.3i [2016/01/06]

- * `\url` from `url.sty` as well as `\url` and `\nolinkurl` from `hyperref.sty` use math mode and (by default) the monospace text font. To avoid `mathastext` overwriting the special preparation done by `{url,hyperref}.sty` the commands `\url/\nolinkurl` are patched to do automatically `\MTactivemathoff` (now `\MTeverymathoff`) before entering math mode.

- * the extra skips specified by `\MTsetmathskips` are not inserted around letters if inside the arguments of math alphabet commands, or within operator names.

- * the added explicit italic corrections (for non-oblique fonts) were disabled within math alphabet scopes, except `mathnormal`; they are now disabled within all math alphabets, inclusive of `mathnormal`.

1.3h [2015/10/31]

- * bugfixes: since 1.3d 2014/05/23 the option `symbolgreek` caused `\ell` to become undefined,

and, similarly but far worse, options `selfGreek`, `selfGreeks` caused all lowercase Greek letters `\alpha`, `\beta`, etc.. to become undefined.

1.3g [2015/10/15]

- * following 2015/10/01 LaTeX release, removal of the "luatex" prefix from the names of the LuaLaTeX math primitives. Compatibility maintained with older LaTeX formats.

1.3f [2015/09/12]

- * the replacement of `amsmath`'s `\resetMathstrut@`, when it is done, emits an Info rather than a Warning as this could be potentially stressful to some users.

- * the README self-extracts from the dtx source, as a text file `README.md` with Markdown syntax.

1.3e [2015/09/10]

- * bugfix: under option `nosmalldelims`, `\lbrace` and `\rbrace` were redefined as math symbols and could not be used as delimiters.

1.3d [2015/02/26]

- * the documentation mentions the improved compatibility of `mathastext` with the latest (3.34) beamer release: no more need for `\usefonttheme{professional}`.

1.3d [2014/05/23]

- * new commands `\MTstandardgreek` and `\MTcustomgreek`.

- * The Greek letters, in case of use of one of the package related options, are left to their defaults in the normal and bold math versions if the subdued option was also used (this was so far the case only with options `LGRgreek/LGRgreeks`).

- * `\newmcodes@` of `amsmath` is left untouched if package `lualatex-math` is detected.

1.3c [2013/12/14]

- * added a starred variant to `\MTversion` which tells `mathastext` to only do the math set-up and not modify the text fonts.

- * added second optional version name argument to `\Mathastext` and to `\MTDeclareVersion`, to transfer settings for things not otherwise changed by `mathastext` from a math version to the one declared. This is mainly for symbols and large symbols to be the bold ones when the user sets up

the series of a mathastextified font to be bold in a mathastext-declared version.

- * renamed `\defaultprod` to `\MToriginalprod`, `\defaultsum` to `\MToriginalsum`, (this is in case of option `symbolmisc`).

- * changes to the dtx organization; options for generating the documentation can be customized in generated `mathastext.tex` file.

- * 1.2d code for `\#`, `\$`, `\%`, and `\&` modified erroneously the earlier correct 1.2c code and created a bug showing up with more than 16 math families (a possibility only with `lualatex` or `xelatex`).

1.3a [2013/09/04]

- * the somewhat silly `\string's` are removed from the `\MTsetmathskips` command of release 1.3, thus allowing its first argument to be a macro, or any expandable code, giving a letter.

- * the `amsmath` `\resetMathstrut@`, which is incompatible with a mathematically active parenthesis (is now modified only if necessary (i.e. `\@` only when `\MTnonlettersobeymathxx` is issued) and is restored to its original value if not needed anymore (i.e. after `\MTnonlettersdonotobeymathxx`, as for example when switching to the normal version under option `subdued`).

- * improved documentation.

1.3 [2013/09/02]

- * commands `\MTsetmathskips` and `\MTunsetmathskips` added.

- * commands `\MTmathactiveletters` and `\MTmathstandardletters` to govern the math activation of letters independently of its use for insertion of the italic corrections (`\MTicinmath` and `\MTnoicinmath` correspondingly modified).

- * the new `\luatexUmathcodenum` as available since TL2013 allows identical treatment by `mathastext` of `=` and `-` under both `LuaTeX` and `XeTeX`.

- * `\newmcodes@` of `amsmath` is left untouched in case of option `basic`.

- * a sentence containing `|` which was written to the log during the loading caused a problem if `|` was active (typically if `\MakeShortVerb{\|}` was added to the preamble prior to the loading of `mathastext`).

- * some preemptive measures taken regarding things such as `\mid`, `\lbrace`, and `\rbrace`, as some packages define these things in manners which

made the re-definitions done by `mathastext` issue errors.

1.2f [2013/01/21]

- * minor code improvements. Change log added to the user manual.

1.2e [2013/01/10]

This version should be the last one in the 1.2 series as it seems to correct most of the main problems which were introduced with the massive use of mathematically active characters in versions 1.2 and 1.2b.

- * It is indeed a thorny point when one wants to modify an active character in math mode only (without breaking usage in label's and ref's for example). The package now does that `_only_` if the activation originated in the Babel system as it is then possible to modify appropriately the Babel macros `\user@active<char>` and `\normal@char<char>`, at the time of entering math mode (`mathastext` does all its activation job at `\everymath` and `\everydisplay`).

The relevant issues are discussed in section 2.10 of the user manual, in the test file `mathastexttestalphabets.tex`, and in the source code comments for macro `\mst@mathactivate`. The inherent incompatibility of Babel with packages having made mathematically active the characters itself makes document active is circumvented by this interference of `mathastext`. A generally applicable Babel patch could be derived from the method used by `mathastext`.

For the non `catcode` active characters, mathematical activation is used. This is done at the entrance in math mode.

- * Sadly, the feature of added italic corrections introduced in version 1.2b did not behave as described in the user manual, due to forgotten group braces. Fixed.

- * The command `\MTlowerast` from the user manual of v1.2d was not the one implemented in the source code. Fixed.

- * The test files automatically extracted from a `latex` run on the dtx file have been revised and extended.

- * The code is better documented.

1.2d [2013/01/02]

- * an incompatibility with `amsmath` (its macro `\resetMathstrut@`), exists since version 1.2 of the package. This is fixed here.

- * various improvements in dealing with the asterisk and in the mechanism of letting non-letter symbols obey the math alphabet commands.

- * documentation extended and improved.

1.2c [2012/12/31]

- * `mathastext` now inserts automatically after all (latin) letters in math mode their italic corrections, if the font used is upright (sic). This improves the spacings for the positioning of subscripts. The feature is de-activated inside the math alphabets commands (apart from `\mathnormal`), so as to not prohibit the formation of ligatures.

- * the documentation has been extended to explain in detail the issues which are relevant to the new feature of added italic corrections.

- * version 1.2 had some bad bugs when confronted to active characters. This is corrected and additionally `\MTnonlettersdonotobeymathxx` is made the default, as the user input is too much constrained in its absence.

- * a less fatal, but still annoying, typo had made the dot in 1.2 of type `\mathpunct` rather than `\mathord`.

- * the inner namespace has been rationalized a bit.

1.2 [2012/12/20]

- * a new command sets up the amount of space to be automatically inserted before the derivative glyph (useful when using an upright font).

- * the scope of the math alphabets has been extended to apply to the non-alphabetical characters, and also to operator names.

- * the format of the dtx file has changed. The package file is self-extracting from the dtx, and four additional test files are also produced during latex `mathastext.dtx`.

1.15f and 1.15g [2012/10/25]

- * `\$, \#, \&`, and `\%` had been re-defined by `mathastext` since its inception in a rather strange (but working) way, which could cause surprises to other packages. Fixed.

- * the subdued mechanism for the math alphabets is implemented in a simpler and more efficient manner than in 1.15e.

- * the defaultxx options act a bit differently, and are more useful in case of a too many math alphabets situation.

- * various improvements in the documentation.

- * general clean up and better commenting of the source code.

1.15e [2012/10/22]

- * new user commands to specify skip or glue to be inserted after the math symbols `\exists` and `\forall`

- * complete (user transparent) rewrite of the code implementing the subdued option; and its action has been extended to apply also to the `\mathbf`, `\mathit`, `\mathsf`, `\mathtt` alphabets and not only to `\mathrm` and `\mathnormal` as in the previous versions.

- * improvements in the documentation.

1.15d [2012/10/13]

- * the Unicode situation is now correctly treated, throughout the code (this had been left in a half-done way from version 1.14 of April 2011).

- * this includes an issue related to `amsmath` and its `DeclareMathOperator` macro which has been fixed,

- * and the code related to `\relbar` and `\Relbar` (and `\models`) has been revised.

1.15c [2012/10/05]

- * it is now possible to use distinct fonts in LGR encoding for the Greek letters according to the current math version.

- * improvements to the documentation.

1.15b

- * corrected a 'feature' of 1.15 which was backward-incompatible

- * improvements to the pdf documentation

1.15 [2012/09/26]

- * the subdued option allows the `mathastextification` to act only locally.

- * some measures taken to deal with `amsmath` related issues when using `xetex` or `luatex`.

1.14c

- * a bug is fixed: the `\Mathastext` macro reinitializes the fonts in the normal and bold math versions, but it also erroneously redeclared the math alphabet changing commands which could have been set up in previously defined math versions (via earlier calls to `\Mathastext\{version_name\}`).

1.14b [2011/04/03]

* there was a bug with $\$, \#, \&, \%$ in math mode which showed up when ten or more math families had been declared. This bug affected also the minus sign under the same circumstances, when Unicode engines were used. Fixed.

* the options LGRgreek and selfGreek act now a bit differently, and new options LGRgreeks and selfGreeks have been defined.

* I also cleaned up a bit the code, for a more structured namespace.

1.14

* mathastext now modifies also the math alphabets \mathit , \mathsf and \mathtt , thus making it a quite generic complete manner to adapt the math configuration to fonts provided with no math support.

1.13b

* when the Symbol font is used for \prod and \sum this will be only for inline math; display math will use the default glyphs

1.13 [2011/03/11]

* the LGRgreek option is added.

* internal changes for better readability of the code.

1.12

* various bugs have been corrected.

* the endash and alldelims options are active by default.

* the package is more Unicode aware.

* the $\backslash\text{Mathastext}$ command has been improved to facilitate the mechanism of math versions also when using XeTeX or LuaTeX (with package fontspec.)

* the en-dash and dotless i and j now work with all encodings, Unicode inclusive.

1.11 [2011/02/06]

* optional argument to $\backslash\text{Mathastext}$ macro.

1.1 [2011/02/01]

* options italic and frenchmath.

1.0 [2011/01/25]

* Initial version.

5 Implementation

The usual catcode regime for letters and digits is assumed and some characters such as `*`, ```, `"`, `=` are supposed to be of catcode other than at the time of loading of `mathastext`. The source of `mathastext` takes precautions for some other characters such as the right quote `'`, which may thus be active with no harm at the time of loading. By the way, I think L^AT_EX₂_ε should have provided to authors a standard macro to be used at the beginning of a style file to make sure the catcodes are standard. Shorthands created by Babel should be mostly no problem as Babel does the activation only at the `\begin{document}`.

The comments have been accumulating through successive versions with only partial efforts to achieve some sort of coherence; as a result some are a bit strange or obsolete to various degrees. And the similar remark applies to some ancient parts of the code itself!

Should I require 2005/12/01 L^AT_EX? (not sure about the month).

```
1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage {mathastext}
3 [2023/12/29 v1.3zb Use the text font in math mode (JFB)]
```

1.3zb avoids writing `mathastext` info messages also to console output, only log file. Make prefix occupy 20 not 25 characters for alignment with `LaTeX Font Info`, as the latter often issues info messages. For similar reason the usages of `\PackageInfo` will be done with empty lines above and below for better visual separation from the voluminous output of the L^AT_EX font system.

```
4 \def\mst@infoline#1{\immediate\write\m@ne
5     {(\space\space\space mathastext:\space\space\space) #1}}
6 \immediate\write\m@ne{
7 \PackageInfo{mathastext}{Starting the math mode configuration\@gobble}
```

L^AT_EX 2019-10-01 release has made robust math macros such as the math accents and `\hbar`.

```
8 \newif\ifmst@robust@obsessed@LaTeX@era
9 \@ifl@t@r\fmtversion{2019/10/01}{\mst@robust@obsessed@LaTeX@era>true}{
10 \edef\mst@robustifyingspace{\ifmst@robust@obsessed@LaTeX@era\space\fi}
```

Testing for X_YL^AT_EX and LuaL^AT_EX.

1.3g 2015/10/15: update for the naming of primitives, the situation has evolved both on X_YL^AT_EX side and on the LuaL^AT_EX side (LaTeX base 2015/10/01): I was told "U" named math primitives were always available for LuaL^AT_EX. For X_YL^AT_EX, the XeTeX prefix got replaced by U prefix with 0.99.. a certain number of 9. I opted for rather simple approach of just trying the "modern" names and if they don't exist fall back on earlier (and in danger of being deprecated) names.

```
11 \let\mst@Umathcharnumdef\Umathcharnumdef
12 \let\mst@Umathcodenum \Umathcodenum
13 \let\mst@Umathcode \Umathcode
14 \let\mst@Umathchardef \Umathchardef
15 \let\mst@Umathaccent \Umathaccent
16 \newif\ifmst@XeTeX
17 \ifx\XeTeXinterchartoks\@undefined
18 \mst@XeTeXfalse
19 \else
20 \mst@XeTeXtrue
21 \ifx\mst@Umathcharnumdef\@undefined
22 \let\mst@Umathcharnumdef\XeTeXmathcharnumdef
23 \let\mst@Umathcodenum \XeTeXmathcodenum
```

```

24 \let\mst@Umathcode \XeTeXmathcode
25 \let\mst@Umathchardef \XeTeXmathchardef
26 \let\mst@Umathaccent \XeTeXmathaccent
27 \fi
28 \fi
29 \newif\ifmst@LuaTeX
30 \ifx\directlua@\undefined
31 \mst@LuaTeXfalse
32 \else
33 \mst@LuaTeXtrue
34 \ifx\mst@Umathcharnumdef@\undefined
35 \let\mst@Umathcharnumdef\luatexUmathcharnumdef
36 \let\mst@Umathcodenum \luatexUmathcodenum
37 \let\mst@Umathcode \luatexUmathcode
38 \let\mst@Umathchardef \luatexUmathchardef
39 \let\mst@Umathaccent \luatexUmathaccent
40 \fi
41 \fi
42 \newif\ifmst@XeOrLua
43 \ifmst@LuaTeX\mst@XeOrLuatrue\fi
44 \ifmst@XeTeX \mst@XeOrLuatrue\fi

```

1.2: all inner macros of `mathastext` now starts with `\mst@` for a cleaner name-space.

1.31 2016/01/29: hmmm... at this late stage where nobody would expect me to still look at the code, I have found at least two macros which still didn't: `\do@the@endashstuff` and `\do@the@emdashstuff`.

Ok, doing something more serious: compatibility with upcoming TL2016 fontspec and its switch to 'TU' NFSS font encoding in replacement of 'EU1/EU2' Anyhow, the code in `mathastext` has been common to the two Unicode engines for a while, hence it is not hard to adapt to the replacement of EU1/EU2 by TU, maintaining compatibility with legacy installations.

`\mst@OneifUniEnc` The `\mst@OneifUniEnc` is expandable but must be used after having set `\mst@tmp@enc...`

```

45 \def\mst@oti{OT1}
46 \def\mst@eui{EU1}\def\mst@euii{EU2}\def\mst@tu{TU}
47 \def\mst@OneifUniEnc {%
48 \ifx \mst@tmp@enc\mst@tu 1\else
49 \ifx \mst@tmp@enc\mst@eui 1\else
50 \ifx \mst@tmp@enc\mst@euii 1\else 0\fi\fi\fi }
51 \newif\ifmst@goahead
52 \newif\ifmst@abort

```

`\mst@enc` Macros to store the font settings, each math version will store its own records.

```

\mst@fam 53 \def\mst@enc{\encodingdefault}
\mst@ser 54 \def\mst@fam{\familydefault}
\mst@opsh 55 \def\mst@ser{\seriesdefault}
\mst@bold 56 \def\mst@opsh{\shapedefault} %% will be default shape for operator names
\mst@ltsh 57 \def\mst@bold{\bfdefault}
58 \def\mst@ltsh{\shapedefault} %% will be default shape for letters

```

`\mst@greekfont` 1.15c: for use by the LGRgreek and selfGreek options. Defined as an `\edef` in order to be able

to set-up once and for all the Greek at the time of `\usepackage`. Modifiable in the preamble via `\MTgreekfont{<font_name>}\Mathastext`.

```
59 \edef\mst@greekfont{\familydefault}
```

Package options 2011/03/09: 1.13 introduces the option `LGRgreek` and systematic use of `\if... conditionals`, for better readability (by myself) of the code.

1.3x of 2022/11/03 adds `ncccomma`, `binarysemicolon` and `frenchmath*` options.

1.3za adds `LGRgreek+` and `LGRgreeks+`.

1.3zb adds `decimalcomma` and modifies `frenchmath*` to use it. And provides `frenchmath+` as an alias to former `frenchmath*`. Consecutive to the change at 2.7 of `frenchmath` which replaced `ncccomma` by `decimalcomma` and broke the compatibility recipe explained in [subsection 1.5.6](#).

```
60 \newif\ifmst@italic
61 \newif\ifmst@frenchmath
62 \newif\ifmst@ncccomma
63 \newif\ifmst@decimalcomma
64 \newif\ifmst@binarysemicolon
65 \DeclareOption{italic}{\mst@italictrue
66 \def\mst@ltsh{\itdefault}}
67 \DeclareOption{frenchmath}{\mst@frenchmathtrue\mst@italictrue
68 \def\mst@ltsh{\itdefault}}
69 \DeclareOption{ncccomma}{\mst@ncccommatruetrue}
70 \DeclareOption{decimalcomma}{\mst@decimalcommatruetrue}
71 \DeclareOption{binarysemicolon}{\mst@binarysemicolontrue}
72 \DeclareOption{frenchmath*}{\mst@frenchmathtrue\mst@italictrue
73 \def\mst@ltsh{\itdefault}\mst@decimalcommatruetrue\mst@binarysemicolontrue}
74 \DeclareOption{frenchmath+}{\mst@frenchmathtrue\mst@italictrue
75 \def\mst@ltsh{\itdefault}\mst@ncccommatruetrue\mst@binarysemicolontrue}
76 \newif\ifmst@endash\mst@endashtrue
77 \DeclareOption{endash}{\mst@endashtrue}
78 \DeclareOption{noendash}{\mst@endashfalse}
79 \newif\ifmst@emdash
80 \DeclareOption{emdash}{\mst@emdashtrue\mst@endashfalse}
81 \newif\ifmst@alldelims
82 \edef\mst@tmp{\encodingdefault}\ifx\mst@oti\mst@tmp\else\mst@alldelimstrue\fi
83 \DeclareOption{alldelims}{\mst@alldelimstrue}
84 \DeclareOption{nolessnomore}{\mst@alldelimsfalse}
85 \newif\ifmst@nosmalldelims
86 \DeclareOption{nosmalldelims}{\mst@nosmalldelimstrue}
87 \newif\ifmst@noplus
88 \DeclareOption{noplus}{\mst@noplustrue}
89 \newif\ifmst@nominus
90 \DeclareOption{nominus}{\mst@nominustrue}
91 \DeclareOption{noplusnominus}{\ExecuteOptions{noplus,nominus}}
92 \newif\ifmst@noparen
93 \DeclareOption{noparenthesis}{\mst@noparenttrue}
94 \newif\ifmst@nopunct
95 \DeclareOption{nopunctuation}{\mst@nopuncttrue}
96 \newif\ifmst@noequal
97 \DeclareOption{noequal}{\mst@noequaltrue}
```

```

98 \newif\ifmst@noexclam
99   \DeclareOption{noexclam}{\mst@noexclamtrue}
100 \newif\ifmst@asterisk
101   \DeclareOption{noasterisk}{\PackageWarningNoLine{mathastext}
102     {option `noasterisk\string' is deprecated.^^J\space\space\space
103     Check the documentation}}
104   \DeclareOption{asterisk}{\mst@asterisktrue}
105 \newif\ifmst@nospecials
106   \DeclareOption{nospecials}{\mst@nospecialstrue}
107 \newif\ifmst@basic % 1.3 to avoid unnecessary patch of amsmath \newmcodes@
108   \DeclareOption{basic}{\mst@basictrue}
109   \ExecuteOptions{noparenthesis,nopunctuation,%
110     noplusnominus,noequal,noexclam,nospecials,nolessnomore}}
111 \newif\ifmst@nohbar
112   \DeclareOption{nohbar}{\mst@nohbartrue}
113 \newif\ifmst@nodigits
114   \DeclareOption{nodigits}{\mst@nodigitstrue}
115 \newif\ifmst@defaultimath
116   \DeclareOption{defaultimath}{\mst@defaultimathtrue}
117 \newif\ifmst@mathaccents
118   \DeclareOption{mathaccents}{\mst@mathaccentstrue}
119 \newif\ifmst@unimathaccents % 1.3u
120   \DeclareOption{unimathaccents}{\mst@mathaccentstrue\mst@unimathaccentstrue}
121 \newif\ifmst@needsymbol
122 \newif\ifmst@symboldelimiters
123   \DeclareOption{symboldelimiters}{\mst@needsymboltrue\mst@symboldelimiterstrue}
124 \newif\ifmst@symboldigits
125   \DeclareOption{symboldigits}{\mst@needsymboltrue\mst@symboldigitstrue}
126 \newif\ifmst@symbolgreek
127 \newif\ifmst@customgreek %% new with 1.3d
128   \DeclareOption{symbolgreek}{\mst@needsymboltrue\mst@symbolgreektrue
129     \mst@customgreektrue }
130 \newif\ifmst@symbolre
131   \DeclareOption{symbolre}{\mst@needsymboltrue\mst@symbolretrue}
132 \newif\ifmst@symbolmisc
133   \DeclareOption{symbolmisc}{\mst@needsymboltrue\mst@symbolmisctrue}
134   \DeclareOption{symbol}{\ExecuteOptions{symbolgreek,symbolmisc,symbolre}}
135   \DeclareOption{symbolmax}{\ExecuteOptions{symbol,symboldelimiters}}
136 \newif\ifmst@needeuler
137 \newif\ifmst@eulerdigits
138   \DeclareOption{eulerdigits}{\mst@needeulertrue\mst@eulerdigitstrue}
139 \newif\ifmst@eulergreek
140   \DeclareOption{eulergreek}{\mst@needeulertrue\mst@eulergreektrue
141     \mst@customgreektrue }
142 \newif\ifmst@selfGreek
143   \DeclareOption{selfGreek}{\mst@selfGreektrue\mst@customgreektrue}
144 \newif\ifmst@selfGreeks
145   \DeclareOption{selfGreeks}{\mst@selfGreektrue\mst@selfGreektrue
146     \mst@customgreektrue }

```



```

147 \newif\ifmst@LGRgreek
148   \DeclareOption{LGRgreek}{\mst@LGRgreektrue\mst@customgreektrue}
149 \newif\ifmst@LGRgreeks
150   \DeclareOption{LGRgreeks}{\mst@LGRgreekstrue\mst@LGRgreektrue
151                               \mst@customgreektrue}
152 \newif\ifmst@greekplus
153   \DeclareOption{LGRgreek+}{\ExecuteOptions{LGRgreek}\mst@greekplustrue}
154   \DeclareOption{LGRgreeks+}{\ExecuteOptions{LGRgreeks}\mst@greekplustrue}
155 \def\mst@greek@select{0}
156 \newif\ifmst@itgreek
157 \newif\ifmst@upgreek
158   \DeclareOption{itgreek}{\mst@itgreektrue}
159   \DeclareOption{upgreek}{\mst@upgreektrue}
160   \DeclareOption{itGreek}{\def\mst@greek@select{1}}
161   \DeclareOption{upGreek}{\def\mst@greek@select{2}}

```

Starting with 1.15f the meaning of the ‘defaultxx’ options has changed. They now prevent `mathastext` from defining additional alphabets rather than prevent it from identifying the ‘mathxx’ with the new ‘Mathxx’. The ‘Mathnormal’ and ‘Mathrm’ alphabet commands are always created as they are `SymbolFontAlphabets`.

This was again changed at 1.3za. The additional alphabets are always declared, the options only prevent mapping the existing ‘mathxx’ to the new ‘Mathxx’. This may be breaking change if people used these options because they had a need for the `\Mathbf` etc... names.

```

162 \newif\ifmst@defaultnormal
163   \DeclareOption{defaultnormal}{\mst@defaultnormaltrue}
164 \newif\ifmst@defaultrm
165   \DeclareOption{defaultrm}{\mst@defaultrmtrue}
166 \newif\ifmst@defaultbf
167   \DeclareOption{defaultbf}{\mst@defaultbftrue}
168 \newif\ifmst@defaultit
169   \DeclareOption{defaultit}{\mst@defaultittrue}
170 \newif\ifmst@defaultsf
171   \DeclareOption{defaultsf}{\mst@defaultsftrue}
172 \newif\ifmst@defaultttt
173   \DeclareOption{defaultttt}{\mst@defaultttttrue}

```

Here and elsewhere 1.3za has removed an `\ifmst@nonormalbold` conditional.

```

174 \DeclareOption{defaultalphabets}{\ExecuteOptions{defaultnormal,defaultrm,%
175 defaultbf,defaultit,defaultsf,defaultttt}}

```

`mathastext` considers the default script and especially `scriptscript` sizes to be far too small, and it will modify them. An option maintains the default.

```

176 \newif\ifmst@defaultsizes
177   \DeclareOption{defaultmathsizes}{\mst@defaultsizestrue}
178 \newif\ifmst@twelve
179   \DeclareOption{12pt}{\mst@twelvetrue}
180 \newif\ifmst@fouriervec
181   \DeclareOption{fouriervec}{\mst@fouriervectrue}

```

1.15: the subdued option.

```

182 \newif\ifmst@subdued

```

```

183 \DeclareOption{subdued}{\mst@subduedtrue}
1.3q: the unicode option. Thanks to Tobias BRINK for suggesting its incorporation. The parsing
of \CurrentOption does not seek any robustness, it just does its job if the option is used correctly.
184 \def\mst@unicodeminus {2013}
185 \def\mst@checkoption #1unicodeminus#2\mst@#3\mst@@
186 {\ifx\#3\PackageWarningNoLine{mathastext}
187 {Unknown option `\'CurrentOption\string'}\else
188 \ifx\#2\def\mst@unicodeminus {2212}\else
189 \expandafter\def\expandafter\mst@unicodeminus\expandafter{\@secondoftwo#2}%
190 \fi\fi}
191 \DeclareOption{%
192 {\expandafter\mst@checkoption\CurrentOption\mst@ unicodeminus\mst@\mst@@}

193 \ProcessOptions\relax

```

`\DeclareMathAccent` I somehow missed realizing L^AT_EX 2019-10-01 if used together with `amsmath` made repeated usage of `\DeclareMathAccent` trigger an error: <https://github.com/latex3/latex2e/issues/216>. This broke usage of `\Mathastext` macro in preamble.

1.3w works around this via `\mst@DeclareMathAccent`. And other changes were made in `mathastext` code to cope with these complications around robustness.

```

194 \def\mst@DeclareMathAccent#1{\let#1\mst@undefined
195 \expandafter
196 \let\csname\expandafter@gobble\string#1\space\endcsname\mst@undefined
197 \DeclareMathAccent{#1}}

```

Helper macros to test math version names. User is not allowed to redefine via `\Mathastext` with optional argument or via `\MTDeclareVersion` the normal and bold math versions! Added at 1.3w, about 7 years late.

```

198 \def\mst@normalversionname{normal}%
199 \def\mst@boldversionname{bold}%

```

`\exists` 1.15e 2012/10/21: math skip/glue *after* `\exists` and `\forall`, this is useful with upright letters

`\mst@exists@skip` in math mode. Each math version has its own user defined values for the skips, stored as macros.

`\forall` The redefinitions of \exists and \forall are done only at the end of the package as the `symbol` option will

`\mst@forall@skip` also want to redefine these math symbols.

`\MTnormalexists` The subdued option (later and only for the normal and bold math version) and the italic

`\MTexistsdoesskip` option (here) set to zero the package default skips. With 1.2 the skips can be modified on the

`\MTnormalforall` fly in the document, they are not necessarily set in the preamble once and for all for each math

`\MTforalldoesskip` version.

1.3j adds `\MTnormalexists`, `\MTexistsdoesskip`, `\MTnormalforall`, `\MTforalldoesskip`.

Earlier to 1.3j, `\let\mst@exists@original\exists` was done at End of Package, now it is done at Begin Document, and same for `\forall`. We pay attention that use of `\MTnormalexists` etc... inside the preamble does not create self-let's.

Also subdued mode will do `\MTnormalexists`, `\MTnormalforall` (earlier than 1.3j, it only set the muskips to Omu.) Same when using `\MTversion{normal}`, if subdued.

For some (random, legacy) reason, the handling of \exists and \forall is part of the things not included inside `\everymath/\everydisplay`.

1.3v The `mathastext`-defined `\exists` and `\forall` are created `\protected`. We feel this matches better with their default definition as `\mathchardef` tokens than dealing with L^AT_EX2e robust macros. Besides, the coding is simpler.

```

200 \newmuskip\mst@exists@muskip %% v 1.15e
201 \newmuskip\mst@forall@muskip
202 \def\mst@exists@skip{1mu}
203 \def\mst@forall@skip{.6667mu}
204 \ifmst@italic\ifmst@frenchmath\else
205   \def\mst@exists@skip{0mu}
206   \def\mst@forall@skip{0mu}
207   \def\mst@prime@skip {0mu}
208 \fi\fi
209 \protected\def\mst@exists{\mst@exists@original\mskip\mst@exists@muskip}
210 \protected\def\mst@forall{\mst@forall@original\mskip\mst@forall@muskip}
211 \AtBeginDocument{%
212   \let\mst@exists@original\exists
213   \let\mst@forall@original\forall
214   \def\MTnormalexists  {\let\exists\mst@exists@original }%
215   \def\MTexistsdoesskip {\let\exists\mst@exists }%
216   \def\MTnormalforall  {\let\forall\mst@forall@original }%
217   \def\MTforalldoesskip {\let\forall\mst@forall }%

```

The document body starts in the normal math version, whether or not `\Mathastext` command as been used in the preamble (which either re-defines the normal/bold math version or defines another one in case of optional argument), and in case of `subdued` option should use the standard \forall and \exists .

```

218   \ifmst@subdued
219   \else
220     \MTexistsdoesskip
221     \MTforalldoesskip
222   \fi
223 }%
224 \newcommand*{\MTnormalexists  }{\AtBeginDocument {\MTnormalexists  }}
225 \newcommand*{\MTexistsdoesskip }{\AtBeginDocument {\MTexistsdoesskip }}
226 \newcommand*{\MTnormalforall  }{\AtBeginDocument {\MTnormalforall  }}
227 \newcommand*{\MTforalldoesskip }{\AtBeginDocument {\MTforalldoesskip }}

```

`\prime` 1.2 2012/12/17: math skip/glue *before* the `\prime` glyph. This is useful with the default CM glyph and upright letters (in contrast the prime from `txfonts` works fine with upright letters).
`\mst@prime@skip` For this we replace the L^AT_EX kernel `\active@math@prime` with our own skip-enhanced version
`\active@math@prime` `\mst@active@math@prime`.
`\MTnormalprime`
`\MTprimedoesskip`

1.2b 2012/12/31: doing

```
{\catcode'\prime=\active \global\let'\mst@active@math@prime}
```

is awfully wrong when the right quote is made active at begin document by some other package (as happens with `babel` for some languages). So `mathastext` treats now the right quote with the same method as applied to the other characters it makes mathematically active. This uses the macro `\mst@mathactivate` which is defined later in the package.

Babel does `\let\prim@s\bbl@prim@s` when `'` is made active via its services (the czech and slovak languages also store the initial version of `\prim@s`, else the quote would not work correctly when being again of `catcode 12`), and it doesn't matter if `mathastext` is loaded before or

after this happens, as the `\mst@mathactivate` does its job only as part of the `\everymath` and `\everydisplay` token lists.

1.2e being paranoid, we take precautions against a possibly catcode active right quote at the time of loading `mathastext`.

1.3i adds `\MTactiveprime`.

1.3j renames it to `\MTprimedoesskip`. Besides, it makes use in the preamble of `\MTnormalprime` or `\MTprimedoesskip`.

```

228 \newmuskip\mst@prime@muskip    %% v 1.2
229 \def\mst@prime@skip{.5mu}
230 \ifmst@italic\ifmst@frenchmath\else\def\mst@prime@skip{0mu}\fi\fi
231 \def\mst@active@math@prime{\sp\bgroup\mskip\mst@prime@muskip\prim@s}
232 {\catcode`\'=12
233 \gdef\mst@modifyprime{\mst@mathactivate'}\mst@active@math@prime}}
234 \newcommand*\MTnormalprime    {\let\mst@modifyprime\@empty }
235 \newcommand*\MTprimedoesskip {\let\mst@modifyprime\mst@modifyprime}
236 \ifmst@subdued
237     \MTnormalprime
238 \else
239     \MTprimedoesskip
240 \fi
241 \AtBeginDocument{%
242     \everymath\expandafter
243         {\the\everymath    \mst@modifyprime \MTnormalprime}%
244     \everydisplay\expandafter
245         {\the\everydisplay \mst@modifyprime \MTnormalprime}%
246 }
```

`\MTexistsskip` 1.15e: These user macros set up the amount of muglue after `\exists` or `\forall`. The normal and bold math versions inherit the same skips; these skips are set to zero in case of the subdued, `\MTforallskip` or the italic option. Each command `\Mathastext[⟨version_name⟩]` stores the current values in the definition of the math version.

1.2: `\MTprimeskip` added, the silly `\@onlypreamble` are removed and the macros are modified to have immediate effect in the document, independently of their possible use in the preamble for the math versions to store values.

Note (september 2013): the names were badly chosen; `\MTsetprimeskipto` for example would have been a better choice.

```

247 \newcommand*\MTexistsskip[1]{\edef\mst@exists@skip{#1}%
248     \mst@exists@muskip\mst@exists@skip\relax}
249 \newcommand*\MTforallskip[1]{\edef\mst@forall@skip{#1}%
250     \mst@forall@muskip\mst@forall@skip\relax}
251 \newcommand*\MTprimeskip[1]{\edef\mst@prime@skip{#1}%
252     \mst@prime@muskip\mst@prime@skip\relax}
253 \let\Mathastextexistsskip\MTexistsskip
254 \let\Mathastextforallskip\MTforallskip
255 \let\Mathastextprimeskip\MTprimeskip
256 \let\mathastextexistsskip\MTexistsskip
257 \let\mathastextforallskip\MTforallskip
258 \let\mathastextprimeskip\MTprimeskip
```

`\resetMathstrut@` 2012/12/31: The `amsmath` macro `\resetMathstrut@` is not compatible with a mathematically active opening parenthesis: it does

```
\mathchardef\@tempa\mathcode`\(\relax
```

and is made a part of the hook `\every@math@size` inside `\glb@settings`. This is called from `\check@mathfonts` which is done in particular in `\frozen@everymath`, hence *before* (but wait) what `mathastext` puts in `\everymath`. Also, `\glb@settings` is triggered by `\mathversion` which must be done outside of math mode.

Alas, with things such as `$....\hbox{...$..$..}$` `mathastext` will have already made the parenthesis (mathematically) active. And `\boldsymbol` from `amsbsy` disables the `\@nomath` switch and executes `\mathversion{bold}` directly in math mode. So we have a problem with `\resetMathstrut@`.

`lualatex-math` replaces `\resetMathstrut@` with its own version (which also looks at `)`) and no error is signaled when `mathastext` has done `\mathcode`("8000`, but the `\Mathstrutbox@` created by `mathastext` is then wrong.

The replacement macro avoids a potentially math active `(`. It assumes that there is still some appropriate glyph in slot 40 of `operators` and it sets the height and depth of `\Mathstrutbox@` to be large enough to accomodate both this glyph and the one from the `mathastext` font (both in the current math version). If option `noparenthesis` was used, we leave everything untouched.

In 1.3a, 2013/09/04, the modification is done only at the time of `\MTnonlettersobeymathxx`. It is canceled by `\MTnonlettersdonotobeymathxx`. So the code has been moved to these macros and here we just store at the begin document the then meaning of `\resetMathstrut@`, and check also if `\MTnonlettersobeymathxx` has been invoked in the preamble.

1.3f 2015/09/12 issues only an Info message not a Warning, as I am becoming aware from another context (etoc) that Warnings are stressful to users, in some integrated environments for editing and compiling L^AT_EX source files.

```
259 \ifmst@noparen\else
260 \AtBeginDocument{%
261   \@ifundefined{resetMathstrut@}{% nothing to do, no amsmath
262   }{% amsmath loaded, and possibly patched by things such as lualatex-math
263   \let\mst@savedresetMathstrut@\resetMathstrut@
264   \PackageInfo{mathastext}{current `at begin document\string' meaning of
265   \amsmath\MessageBreak
266   \string\resetMathstrut@\space preserved for
267   future use\@gobble}%
268   \ifx\mst@the\the % means that \MTnonlettersobeymathxx was used in preamble
269   \let\mst@the\@gobble\MTnonlettersobeymathxx
270   \fi}}
271 \fi
```

1.2 2012/12/20 does some rather daring *math* activation of `;`, `,`, `:`, `!`, `?`, `+`, `-`, `=`, `<`, `>`, `(`, `)`, `[`, `]` in math mode to achieve something I wanted to do since a long time: overcome the mutually excluding relation between the variable-family concept and the automatic spacing concept. After loading `mathastext`, these characters now obey the math alphabets commands but still have the automatic spacing. The use as delimiters for those concerned is also ok.

The activation is done via setting the `\mathcode` to "8000 through the macro `\mst@mathactivate` which in turn is put into the `\everymath` and `\everydisplay` token lists. No character is made active in the sense of the `\catcode` (the issues with `catcode` active characters at the entrance of the math mode are discussed later),

but the concerned characters will now expand in math mode to *two* tokens.

1.2c 2012/12/31: hence, this current implementation puts constraints on the input: $x^?y$ or $x\mathrel{?}y$ now create errors. They must be input $x^{?}$, respectively $x\mathrel{?}y$.

The disactivating macro `\Mnonlettersdonotobeymathxx` is made the default.

The mechanism is (even more) off by default for `\{` and `\}` as this is not compatible with their use as delimiters (`\lbrace` and `\rbrace` should be used instead) but it can be activated for them too.

`\mst@mathactivate`

1.2b 2012/12/30: there were bad oversights in the 1.2 code for `\mst@mathactivate` related to the possibility for some characters to have been made active (in the sense of the catcode) elsewhere (something which often is done by language definition files of the `babel` system). The code from v1.2b tried to provide correct behavior using a prefix called `\mst@fork` (its definition and its use has since been modified) which let the active character expand to the `mathastext` re-definition *only* in math mode and *only* if `\protect` was `\@typeset@protect`. This indeed took care of situations such as $\hbox{?}$ with an active `?` or $\label{eq:1}$ with an active `:` (assuming for the latter that things would have worked ok before the twiddling by `mathastext`).

1.2e 2013/01/09: alas $\ref{eq:1}$ still was a problem. Indeed in that case the `mathastext` prefix had no means to know it was inside a `\ref` so it made the character expand to its `mathastext` redefinition, which is not acceptable inside a `\csname...\endcsname`. What happens with Babel is that it patches things such as `\ref`, `\newlabel`,... we can test the `\if@safe@actives` flag to detect it in that case, but this is Babel specific. After having thought hard about this I see no general solution except patching all macros such as `\ref...` (in an imitation of what Babel does). So the final decision is to not do anything when the character is catcode active *except* it it seems that Babel is behind the scenes.

Incidentally, Babel and TikZ are buggy with characters which are mathcode actives. For example the combination of `[french]{babel}` and `mathtools` with its `centercolon` turns $:\$$ into an *infinite loop* !!

In the case of Babel the reason is that, generally (but not always, the right quote ' is an exception), the `\normal@char<char>` fall-back is `\string<char>`. But this is wrong if the mathcode is 32768! The fall-back becomes the default if the user switches to a language where `<char>` is 'normal' and then an infinite loop arises.

As a further example (I am not familiar with other languages from the Babel system) with `frenchb` the active `!?:;` expand in math mode to `\string!` or `?` or `;` or `..`. This creates an infinite loop if the mathcode is 32768.

For the special case of the right quote ' when it is made active by Babel, its fall-back does not invoke `\string'` so being still of mathcode 32768 is not a problem.

I have posted online how Babel should possibly modify its definitions and I use this here. I simplify a bit my proposed replacement of `\normal@char<char>` as the check for `\protect` is superfluous, I think, having been done already at the level of the Babel prefix.

Replacing `\user@active<char>` is indeed not enough, and `\normal@char<char>` also must be changed, because when the user switches back to a language where the character is 'normal' it remains catcode active. The crucial thing is the test of `\if@safe@actives` in the replacement of the `\normal@char<char>`, besides of course the test for math mode in both replacements.

When the character is not catcode active, then `mathastext` uses the math activation method. As the mathcode is not looked at in `\edef`, `\write` or inside `\csname...\endcsname` nothing special needs to be done, I think, in terms of protection against premature expansion. (I did not know that initially).

So, to recapitulate, `mathastext` will use the mechanism of the active mathcode if the character is not catcode active, and in the opposite case will do something only in the context of Babel, modifying directly its `\user@active<char>` and its `\normal@char<char>` macros and

it does NOT then set the mathcode to 32768!!], rather it makes *sure* the character is not mathematically active.

As 1.2e is a bit paranoid it takes precautions against the possibility of characters it treats being active at the time of its loading. Excepted from the scope of the paranoia are the latin letters (that would be crazy!) and also *, " and the left quote `.

1.2f 2013/01/21 with earlier versions (*) it was important not to do twice the business of `\mst@mathactivate` (think `$$\hbox{${?}$}$`), so I used (this was a bit wasteful) some sort of boolean macro for each character. But now that there are the `\mst@the..` prefixes, let's just use them! (don't know why I did not think of that earlier; perhaps I had in mind some more general character per character customization initially, which I just dropped.)

(*) it is still important to not do twice the thing when the character is active, in which case the `babel` macros are patched.

As an aside, `$$\hbox{\catcode`?=\active $?$}$` for an ? which was unactive at the first \$ will just make `mathastext` overwrite the definition (assumed here to have been done earlier) of an active ?, but the result is that the inner ? can not be used in `\label` or `\ref`. So testing for active characters should be done always... many things should be done always... I leave as is.

1.3i 2016/01/06 removes a spurious end of line space in `\mst@mathactivate` (did not show as anyhow done in math mode).

`\mst@do@aZ` 1.2b 2012/12/28 now that we understand the great advantages of "8000 we do it also for all
`\mst@do@AZ` letters a-z and A-Z to insert automatically the italic corrections. See the [discussion](#) in the user
`\mst@addtodo@aZ` manual. Ironically I wrote the code initially for the `italic` option only to realize later it was
`\mst@addtodo@AZ` more suitable to using an *upright* text font in math mode! So this mathematical activation of
`\mst@the` the letters is not done if the font shape is detected to be `it` or `sl`; to bypass this the command
`\MTicinmath` is provided.

1.2e 2013/01/10 corrects a bad oversight of 1.2b in `\mst@mathactivate` which made the reproduction of the user manual illustrations with `$$f_i^i$` impossible. As `\mst@mathactivate` was originally used also to get the non-letters obey math alphabet while maintaining the T_EX spacings, it added no extra braces. The braces should however be added for expansion of math active letters, in order of things like x^y to work as expected. (the group braces do not prevent ligatures when the letters are arguments to the math alphabet commands, the added macros `\mst@itcorr` and `\mst@before<letter>` expanding to nothing).

Added note 2016/01/06: it should be explicitly said that the extra `{. .}` in `\mst@mathactivate` for letters end up creating `\hbox`'es around each letter with its extra skips and explicit italic correction, when present. These skips are thus set at natural width and do not add any break point.

`\MTmath-` 1.3 2013/09/02 extends the use of mathematically active letters to allow the user to specify
`activeletters` `muglue` before and after the letter itself (see `\MTsetmathskips`, below). Mathematically active
`\MTmath-` letters were previously used only to add the italic correction; the math activation has now been
`standardletters` separated and put in `\MTmathactiveletters`. There is also `\MTmathactiveLetters` to allow
math activation only for the uppercase letters. To cancel the (now default, even with option
`italic`) math activation of letters, there is `\MTmathstandardletters`. Version 1.3a removes
some silly `\string`'s from the code, which prevented to pass macros as first argument to the
command.

`\MTnonletters-` These macros are modified in version 1.3a 2013/09/04 in order to cleverly adjust, or not, the
`obeymathxx` `amsmath \resetMathstrut@`. When used in the preamble, they just modify `\mst@the`. And
`\MTnonletters-` there is code at begin document to check the status there of `\mst@the` and if its meaning is
`donotobeymathxx`
`\resetMathstrut@`

\the, then \MTnonlettersobeymathxx is activated again to do the patch. When used in the body they adjust \resetMathstrut@.

Notice that the saved meaning is the one at begin document (thus, possibly patched by lualatex-math — not anymore since 1.5 of March 2016, as amsmath.sty now maintained by LaTeX team has modified \resetMathStrut@ to make it compatible to Unicode engines) but modifications done after that would not be seen in \mst@savedresetMathstrut@.

The new version of \resetMathStrut@ from LaTeX team release 2016/03/03 v2.15a of amsmath.sty is still not compatible with a math active opening parenthesis. Hence my patch here is still needed.

At 1.3u \MTnonlettersobeymathxx and \MTeasynonlettersobeymathxx are made no-ops under subdued mode. This fixes some bug if for example the former was used in preamble or immediately after \begin{document} making the minus sign math active although the `mathastext` action was supposedly subdued. Similarly \MTmathactiveletters is now a no-op if issued under subdued mode in the *normal* or *bold* math versions.

```

272 \newtoks\mst@do@nonletters
273 \newtoks\mst@do@easynonletters
274 \newtoks\mst@do@az
275 \newtoks\mst@do@AZ
276 \let\mst@the\@gobble
277 \newcommand*\MTnonlettersdonotobeymathxx{%
278     \ifx\mst@the\@gobble
279     \else
280     \@ifundefined{mst@savedresetMathstrut@}{-}{%
281         \PackageInfo{mathastext}{restoring for this group or environment
282             the original\MessageBreak
283             amsmath \protect\resetMathstrut@}%
284     \let\resetMathstrut@\mst@savedresetMathstrut@}%
285     \fi
286     \let\mst@the\@gobble
287 }%
```

1.3u adds this check that we are not in a subdued normal or bold math version. No need for expandable coding.

```

288 \def\mst@OnlyIfNotSubdued#1{%
289     \ifmst@subdued
290     \ifx\math@version\mst@normalversionname
291     \else
292     \ifx\math@version\mst@boldversionname
293     \else
294     #1%
295     \fi
296     \fi
297     \else
298     #1%
299     \fi
300 }%
301 \def\mst@nonlettersobeymathxx{%
302     \ifx\mst@the\the
303     \else
```



```

304 \ifundefined{mst@savereasetMathstrut@}{-}{-%
305 \ifmst@symboldelimiters
306 \def\resetMathstrut@{%
307 \setbox\z@\hbox{\the\textfont\symmtpsymbol\char40
308 \the\textfont\symmoperatorfont\char40
309 \the\textfont\symoperators\char40}}%
310 \ht\Mathstrutbox@ht\z@ \dp\Mathstrutbox@dp\z@}%
311 \else
312 \def\resetMathstrut@{%
313 \setbox\z@\hbox{\the\textfont\symmoperatorfont\char40
314 \the\textfont\symoperators\char40}}%
315 \ht\Mathstrutbox@ht\z@ \dp\Mathstrutbox@dp\z@}%
316 \fi
317 \PackageInfo{mathastext}{\string\resetMathstrut@\space
318 from amsmath replaced for this\MessageBreak group or environment}}%
319 \fi
320 \let\mst@the\the
321 }%
322 \newcommand*{\MTnonlettersobeymathxx
323 {\mst@OnlyIfNotSubdued\mst@nonlettersobeymathxx}}%
324 \newcommand*{\MTeasynonlettersdonotobeymathxx{\let\mst@theeasy\@gobble}}%
325 \def\mst@easynonlettersobeymathxx{\let\mst@theeasy\the}}%
326 \newcommand*{\MTeasynonlettersobeymathxx
327 {\mst@OnlyIfNotSubdued\mst@easynonlettersobeymathxx}}%
328 \MTeasynonlettersobeymathxx % no-op here if subdued mode
329 \def\mst@mathactiveletters{\let\mst@thef\the \let\mst@theF\the}}%
330 \newcommand*{\MTmathactiveletters
331 {\mst@OnlyIfNotSubdued\mst@mathactiveletters}}%
332 \MTmathactiveletters % no-op here if subdued mode
333 \def\mst@mathactiveLetters{\let\mst@theF\the}}%
334 \newcommand*{\MTmathactiveLetters
335 {\mst@OnlyIfNotSubdued\mst@mathactiveLetters}}%
336 \newcommand*{\MTmathstandardletters{\let\mst@thef\@gobble \let\mst@theF\@gobble}}%

```

`\MTicinmath` `\MTnoicinmath` can also be used from inside math mode.

`\MTICinmath` `\MTicalsoinmathxx` is destined to be used inside `\mathnormalbold` as I didn't want to add the complication of extracting the family number used inside `\mathnormalbold` (will perhaps come back if I have time to spend on source2e). Added note 2016/01/06: this number is a priori simply `\symmletterfont+1`.

`\MTicinmath` can also be used inside math mode, to revert an earlier `\MTnoicinmath` from inside the same math group: the math mode had to be entered with the math activation of letters allowed.

1.3i 2016/01/06: For some reason which I have now forgotten I did until now:

```

% \def\mst@itcorr{\ifnum\fam=\m@ne/\else\ifnum\fam=\symmletterfont/\fi\fi}%
%

```

hence italic corrections were also applied inside `\mathnormal` (for upright fonts; `\mathnormalbold` math alphabet was not treated like `\mathnormal`). I now drop this to be more in sync

with the handling of the extra skips around letters. Everything gets suppressed inside all math alphabets, allowing ligatures, even for `\mathnormal`.

```

337 \newcommand*{\MTicinmath}{%
338   \MTmathactiveletters
339   \def\mst@itcorr{\ifnum\fam=\m@ne\/\fi}%
340   \let\mst@ITcorr\mst@itcorr}
341 \newcommand*{\MTICinmath}{%
342   \MTmathactiveLetters
343   \def\mst@ITcorr{\ifnum\fam=\m@ne\/\fi}}
344 \newcommand*{\MTnoicinmath}{\let\mst@itcorr\@empty\let\mst@ITcorr\@empty}
345 \newcommand*{\MTnoICinmath}{\let\mst@ITcorr\@empty}
346 \newcommand*{\MTicalsoinmathxx}{%
347   \ifx\mst@itcorr\@empty\else\def\mst@itcorr{\/\fi}
348   \ifx\mst@ITcorr\@empty\else\def\mst@ITcorr{\/\fi}

```

`\MTsetmathskips` 1.3 2013/09/02: user level command to specify extra spaces in math mode around the letters (only the 7bit a,b,...,z and A,B,...,Z). First parameter is the letter, second is the math skip to be inserted before, and third the skip to be inserted after; for example `\thickmusk` or explicitly `0.1mu`.

For this, letters are made mathematically active. This is now the package default (version 1.2 did this only in the absence of option `italic`, or more precisely when the font used was not of shape `it` or `sl`). But if `\MTsetmathskips` has not been used for that letter, the only effect of the math activation is, as in 1.2, to add the italic correction automatically, except when the font shape is detected to be `it` or `sl`; in these latter cases, although mathematically active, the letter acts in the standard way.

The command `\MTmathstandardletters` turns off math activation and its effects for all letters.

Ligatures within the argument of a math alphabet command are impeached by skips; so `\MTunsetmathskips` is provided to cancel the skips for one specific letter (`f` for example).

1.3a 2013/09/04: I strangely had `\string#1` inside `\MTsetmathskips`. Phobic of catcode active letters... but with `\string` one needs some `\expandafter` to use `\MTsetmathskips` in an `\@for` loop for example. It is better to allow the first argument to be a macro or anything expanding to a letter, and to not be paranoid about improbable catcode active letters (the user just has to tame them at the time of the `\MTsetmathskip`) so I take out these `\string`'s.

1.3i 2016/01/06: the extra skips are suppressed for the arguments of math alphabet commands. This applies in particular for `amsmath`'s `\DeclareMathOperator`.

```

349 \newcommand*{\MTsetmathskips}[3]{%
350   \@namedef{mst@before#1}{\ifnum\fam=\m@ne\mskip#2\relax\fi }%
351   \@namedef{mst@after#1}{\ifnum\fam=\m@ne\mskip#3\relax\fi }%
352 }
353 \newcommand*{\MTunsetmathskips}[1]{%
354   \@namedef{mst@before#1}{}%
355   \@namedef{mst@after#1}{}%
356 }

```

`\mst@mathactivate` Added note 2016/01/06: Notice that the initially `\relax` tokens `\mst@[before|after]@<letter>`
`\addtodo@nonletters` formed with `\csname...\endcsname` do not modify TeX's math layout: `{\relax f\relax}` is
`\code@easynonletters` like `f` (also for ligatures inside `\mathrm` for example).

```

\mst@addtodo@az 357 \def\mst@magic@v #1#2#3#4#5{#1#3#4}
\mst@addtodo@AZ

```

```

358 \def\mst@magic@vi #1#2#3#4#5#6{#1#2#4#5}
359 \def\mst@fork{\ifmmode\mst@magic@v\fi\@thirdofthree}
360 \def\mst@safefork{\ifmmode\if@safe@actives\else\mst@magic@vi\fi\fi\@thirdofthree}
361 \def\mst@do@activecase#1#2#3{% #1 is a category 11 or 12 character token
362   \@ifundefined{active@char#1}{}{%
363     \ifcat #1a\mathcode`#1=#2\else
364     \ifx\relax #2\relax\mathcode`#1=#1 \else\mathcode`#1=#3\fi\fi
365   \expandafter\expandafter\expandafter\let\expandafter\expandafter
366     \csname mst@orig@user@active#1\endcsname
367     \csname user@active#1\endcsname
368   \expandafter\expandafter\expandafter\let\expandafter\expandafter
369     \csname mst@orig@normal@char#1\endcsname
370     \csname normal@char#1\endcsname
371   \ifcat #1a%
372     \expandafter\edef\csname user@active#1\endcsname
373       {\noexpand\mst@fork {#2}\noexpand#3}{}\expandafter
374       \noexpand\csname mst@orig@user@active#1\endcsname
375     }%
376     \expandafter\edef\csname normal@char#1\endcsname
377       {\noexpand\mst@safefork {#2}\noexpand#3}{}\expandafter
378       \noexpand\csname mst@orig@normal@char#1\endcsname
379     }%
380   \else
381     \expandafter\edef\csname user@active#1\endcsname
382       {\noexpand\mst@fork {#2}\noexpand#3}\expandafter
383       \noexpand\csname mst@orig@user@active#1\endcsname
384     }%
385     \expandafter\edef\csname normal@char#1\endcsname
386       {\noexpand\mst@safefork {#2}\noexpand#3}\expandafter
387       \noexpand\csname mst@orig@normal@char#1\endcsname
388     }%
389   \fi}}
390 \begingroup
391   \catcode\~=\active
392   \def\x{\endgroup
393     \def\mst@mathactivate##1##2##3{% ##1 guaranteed of cat 11 or 12
394       \begingroup
395         \lccode\~=#1
396         \lccode`##1=#1
397         \lowercase{\endgroup
398           \ifnum\catcode`##1=\active
399             \mst@do@activecase ##1{##2}##3%
400             % careful as ##2 is empty in the asterisk and
401             % prime case!
402           \else
403             \mathcode`##1="8000
404             % version 1.3 adds the possibility of extra skips around letters,
405             % (only if non catcode active at the time of use).
406             \ifcat##1a\edef~{# extra braces for a~b for example

```

```

407         {\expandafter\noexpand\csname mst@before##1\endcsname
408         ##2\noexpand##3%
409         \expandafter\noexpand\csname mst@after##1\endcsname}}%
410     \else\def~{##2##3}\fi
411     \fi}}
412 \x
413 \def\mst@addtodo@nonletters#1#2#3{%
414 % #1 will be of cat 11 or 12.
415 % #2 is empty for asterisk and right quote
416 \mst@do@nonletters\expandafter
417     {\the\mst@do@nonletters \mst@mathactivate#1{#2}#3}%
418 }
419 \def\mst@addtodo@easynonletters#1#2{% #1 is a one char control sequence
420 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters\mathcode`#1=#2}%
421 }
422 \def\mst@addtodo@az#1#2{%
423 \mst@do@az\expandafter{\the\mst@do@az\mst@mathactivate#1#2\mst@itcorr}
424 }
425 \def\mst@addtodo@AZ#1#2{%
426 \mst@do@AZ\expandafter{\the\mst@do@AZ\mst@mathactivate#1#2\mst@ITcorr}%
427 }

```

`\newmcodes@` 1.15d: the `\newmcodes@` `amsmath` macro causes an error in Unicode engines as soon someone assigns a Unicode mathcode to the minus sign, and then makes a `\DeclareMathOperator` declaration. Furthermore it hard-codes the font family 0 as being the one to be used. Moreover just putting the concerned signs `-`, `:`, `.`, `\`, `'`, `*` inside braces emulates enough the behavior (although the tick will give a prime).

1.3: now tests if ‘basic’ option was used.

1.3d: I should re-examine the situation with `\newmcodes@`. In the meantime its relaxification will not be done if `lualatex-math` is loaded. And the whole thing is put at begin document.

1.3m: `lualatex-math` 1.5 n’a pas modifié son traitement de `\newmcodes@` mais par contre a supprimé le patch de `\resetMathstrut@`. Mais la date de release est restée à 2015/09/22 (date de 1.4a) au lieu de quelque chose comme 2016/03/13 (date pour l’annonce sur CTAN). Il faudra suivre l’évolution future de `amsmath.sty` maintenant assurée par D.C.

1.3n 2016/04/22: there is no more a patch of `\newmcodes@` by `lualatex-math` 1.6 (2016/04/16), as `amsmath` 2016/03/10 v2.15b has now a version compatible with `LuaLTeX`.

My very radical `\let\newmcodes@\relax` was only a temporary measure I adopted for lack of time on October 13, 2012, and apart from avoiding to do that in case `lualatex-math` was detected, I never came back... finally I handle it myself for 1.3n. The remaining problem of this macro (now that it does not anymore crash `lualatex` or vice versa) is that (also with `amsmath` version 2016/03/10 v2.15b) it hardcodes the font used. The aim of the macro is to modify the type of spacing affected to symbols `'`, `*`, `.`, `-`, `/`, `:`, in case they are used in operator names.

- As I don’t want to monopolize a count register only for computations, let’s just be mean if ε -TeX not there.
- `mathastext` makes (or not, depending on commands issued by the user) these characters math active (the right tick already is), which complicates recovery of former mathcode. We have mathchar type *macros*, but then the complication is in diverging behaviours of the engines: `\numexpr\mst@varfam@minus\relax` works with `LuaTeX`, not with `XgTeX`.

- the * must presumably really be the non-lowered text glyph.
- for the - I hesitated but do use the hyphen in the end.
- seems I simply don't understand what the amsmath code does with `\std@minus`. It is used in `\relbar` and it escapes me why `\newmcodes@` would ever want to redefine it, and more importantly why on earth it tests the mathcode of - for that ? yes, `\std@minus` is defined (at begin document) using the mathcode of -, but what's the connexion to `\newmcodes@` ?? Any way `mathastext` defines `\relbar` with `\mst@minus@sign`. Thus I just drop this conditional.
- things are complicated by the options such as `nominus`, `noparenthesis`.
- the `\newmcodes@` macro is anyhow assuming that if a new math font is used it occupies math groups 0 and 1 !! very bad; fixing it in passing if the character has not been handled by `mathastext` could be envisioned, but that's not `mathastext`'s job.
- years go by, and I remain as baffled as ever about the story of "more than 16 math families". I will not test again, but I am pretty sure that `\DeclareMathSymbol` does not work with more than 16 families, thus when I try to be a good boy and use `\Umathcode` syntax with `\symmoperatorfont` I am perhaps doing unnecessary efforts.
- I noticed that Lua^AT_EX does not apply the "TeX Ligature" (bad name) regarding the right tick APOSTROPHE being transformed into RIGHT SINGLE QUOTATION MARK in math mode, but X_qL^AT_EX does. From the point of view of `mathastext`, the behaviour of X_qL^AT_EX is the coherent one. It appears that Lua^AT_EX use in math mode of a text font does not obey the set features. I opened a ticket at <https://github.com/wspr/fontspect/issues/238>, but as usual it is hard to figure out the best place where to report font matters. *This item might be obsolete – not checked (1.3q).*
- Some hesitation about what to do under option `symboldelimiters`. I temporarily used `\symmtpsymbol`, except for the right quote and for the hyphen, but finally I drop that and use `\symmoperatorfont` always. (after testing how it looked like).

All in all this is a great deal of trouble and I understand I postponed back in 2012! I spent some hours on this small thing, with consequent testing and for example this TeX Ligature issue with Unicode engines.

Since 1.3v we require e-^TE_X extensions, so a test for `\numexpr` has been dropped here.

```

428 \ifmst@basic
429 \else
430 \ifmst@XeOrLua
431 \AtBeginDocument {%
432 \ifx\newmcodes@\@undefined\else
433 \edef\mst@newmcodes@{%
434 \mst@Umathcode `\

```

```

443 \fi
444 \ifmst@nominus\mathcode`\noexpand\relax- 45
445 \else
446 \mst@Umathcode`\noexpand\relax- 0 \symmoperatorfont 45\relax
447 \fi
448 \ifmst@noparen\mathcode`\noexpand\relax/ 47
449 \else
450 \mst@Umathcode`\noexpand\relax/ 0 \symmoperatorfont 47\relax
451 \fi
452 }%
453 \let\mst@originalnewmcodes@\newmcodes@
454 \fi
455 }% end of AtBeginDocument
456 \else
457 \AtBeginDocument {%
458 \ifx\newmcodes@\undefined\else
459 \edef\mst@newmcodes@{%
460 \mathcode`\noexpand\relax\the\numexpr\symmoperatorfont*\@cclvi+39\relax
461 \mathcode`\noexpand\relax*
462 \the\numexpr\ifmst@asterisk\symmoperatorfont*\@cclvi\fi+42\relax
463 \ifmst@nopunct\mathcode`\noexpand\relax."613A \mathcode`\noexpand\relax: "603A
464 \else
465 \mathcode`\noexpand\relax. \the\numexpr\mst@varfam@dot-"1000\relax
466 \mathcode`\noexpand\relax: \the\numexpr\mst@varfam@colon-"1000\relax
467 \fi
468 \mathcode`\noexpand\relax-
469 \the\numexpr\unless\ifmst@nominus\symmoperatorfont*\@cclvi\fi+45\relax
470 \mathcode`\noexpand\relax/
471 \the\numexpr\unless\ifmst@noparen\symmoperatorfont*\@cclvi\fi+47\relax\relax
472 }%
473 \let\mst@originalnewmcodes@\newmcodes@
474 \fi
475 }% end of second AtBeginDocument
476 \fi % mst@XeOrLua
477 \fi % mst@basic
478 \newcommand*{\MTreresetnewmcodes}{\ifx\mst@originalnewmcodes@\undefined\else
479 \let\newmcodes@\mst@originalnewmcodes@\fi}
480 \newcommand*{\MTcustomizenewmcodes}{\ifx\mst@originalnewmcodes@\undefined\else
481 \let\newmcodes@\mst@newmcodes@\fi}

```

moperatorfont Declaration of the current default font as our math font. The characteristics of the used font can be changed by a user call to the macros `\Mathastext` or `\Mathastextwilluse`, which will be defined next. We will also make one internal call to `\Mathastext` to set up the normal and bold math versions, so we will also employ `\SetSymbolFont` later.

```
482 \DeclareSymbolFont{moperatorfont}{\mst@enc}{\mst@fam}{\mst@ser}{\mst@opsh}
```

\operator@font We modify this L^AT_EX internal variable in order for the predefined `\cos`, `\sin`, etc... to be typeset with the `mathastext` font. This will also work for things declared through the `amsmath` package command `\DeclareMathOperator`. The alternative would have been to redefine the ‘operators’

Math Symbol Font. Obviously people who expect that `\operator@font` will always refer to the ‘operators’ math font might be in for a surprise... well, we’ll see.

```
\MTmathoperators- 1.2: rather than just replacing \symoperators by \symmoperatorfont I add a modification
obeymathxx       which makes the declared operator names sensitive to the math alphabets... ouh le vilain!
\MTmathoperators- 483 \newcommand*{\MTmathoperatorsobeymathxx}
donot-           484 {\def\operator@font{\mathgroup\ifnum\fam=\m@ne\symmoperatorfont\else\fam\fi}}
obeymathxx       485 \newcommand*{\MTmathoperatorsdonotobeymathxx}
                 486 {\def\operator@font{\mathgroup\symmoperatorfont}}
                 487 \MTmathoperatorsobeymathxx
```

`mtletterfont` At version 1.1, we add the possibility to mimick the standard behavior, that is to have italic letters and upright digits. Thanks to Tariq PERWEZ and Kevin KLEMENT who asked for such a feature.

```
488 \DeclareSymbolFont{mtletterfont}{\mst@enc}{\mst@fam}{\mst@ser}{\mst@ltsh}
```

`\MTfixmathfonts` There is a long-standing issue <https://github.com/lualatex/luatofload/issues/204> on Lua \LaTeX not applying OpenType features in math mode (this impacts `\url` macro too, as it uses math mode.) Lua \TeX has two modes for handling of OpenType fonts, the default in text being to use the `node` mode, and this mode is non-working in math, thus `mathastext` needs to force use of `base` mode. Else one sees old style figures where one does not expect them, or the opposite, depending on the default font feature.

Once we know the cause, the fix is relatively easy. I will go for the `\everymath` way, because I don’t want to dwell at all with the details of \LaTeX ’s handling of math fonts, of size changes, of math versions etc... perhaps in the future \LaTeX will fix the issue upstream by modifying `\DeclareSymbolFont` under Lua \LaTeX + `luatofload` regime, then the present patch by `mathastext` will be unneeded. Naturally, here we care only about the two math fonts used by `mathastext`: `mtoperatorfont` and `mtletterfont`.

For the `\url` situation, I have posted online a patch.

Not all is resolved, as I comment online at <https://github.com/lualatex/luatofload/issues/204#issuecomment-216465680> that with TeX Gyre Termes for example I can not get simultaneously Old Style and Tabular Figures to work in math mode, although the font name as constructed by my patch (which is like the code below, only simpler as we only have to consider `\textfont0`) is the correct one. Similarly with Vollkorn: I can then not get the two features `lnum` and `tnum` to work simultaneously when specified with `mode=base`. It does work with `mode=node` but this mode “does not work in math mode.”

Done for 1.3o of 2016/05/03.

1.3p renames the macro to `\MTfixmathfonts` for public access.

```
489 \begingroup
490 \catcode`N 12
491 \catcode`O 12
492 \catcode`D 12
493 \catcode`E 12
494 \lowercase{\gdef\mst@fixmathfonts@ #1=NODE;#2#3\relax #4@empty #5}%
495   {\ifx#2\empty\else\font\mst@mathfont=#1=base;#2#3\relax#5=\mst@mathfont\fi}
496 \lowercase{\gdef\MTfixmathfonts
497   {\expandafter\mst@fixmathfonts@
498   \fontname\textfont\symmoperatorfont\relax\relax=NODE;\empty\relax@empty
499   {\textfont\symmoperatorfont}}%
```

```

500 \expandafter\mst@fixmathfonts@
501 \fontname\scriptfont\symmoperatorfont\relax\relax=NODE;\empty\relax\@empty
502 {\scriptfont\symmoperatorfont}%
503 \expandafter\mst@fixmathfonts@
504 \fontname\scriptscriptfont\symmoperatorfont\relax\relax=NODE;\empty\relax\@empty
505 {\scriptscriptfont\symmoperatorfont}%
506 \expandafter\mst@fixmathfonts@
507 \fontname\textfont\symmletterfont\relax\relax=NODE;\empty\relax\@empty
508 {\textfont\symmletterfont}%
509 \expandafter\mst@fixmathfonts@
510 \fontname\scriptfont\symmletterfont\relax\relax=NODE;\empty\relax\@empty
511 {\scriptfont\symmletterfont}%
512 \expandafter\mst@fixmathfonts@
513 \fontname\scriptscriptfont\symmletterfont\relax\relax=NODE;\empty\relax\@empty
514 {\scriptscriptfont\symmletterfont}%
515 }%
516 }%
517 \endgroup
518 \ifmst@LuaTeX
519 \everymath\expandafter{\the\everymath\mst@fixmathfonts}%
520 \everydisplay\expandafter{\the\everydisplay\mst@fixmathfonts}%
521 \fi
522 \newcommand*{\MTfixfonts}{\let\mst@fixmathfonts\MTfixmathfonts}%
523 \newcommand*{\MTdonotfixfonts}{\let\mst@fixmathfonts\empty}%
524 \MTfixfonts

```

\Mathnormal We redefine the default normal, rm, bf, it, sf, and tt alphabets, but this will be done via **\Mathrm** **\renewcommand*{\mathrm}{\Mathrm}** etc. . . (not anymore, see comment below).

\Mathbf We follow the standard L^AT_EX behavior for **\mathbf**, which is to pick up the bold series of the roman font (digits and operator names).

\Mathit We will access (if no option is passed for Greek) the **\omicron** via **\mathnormal**. But unfortunately the **fourier** package with the upright option does not have an upright omicron obtainable by simply typing **\mathnormal{o}**. So if **fourier** is loaded we use **\mathrm** and not **\mathnormal**.

Actually math alphabet macros are created robust since L^AT_EX from 2005, so at 1.3v 2019/09/19 I decided to modify the old **mathastext** approach a bit. Indeed with the old approach a **\mathtt** in a moving argument translates ultimately into **\Mathtt** but if for example the new context where it gets expanded is a subdued normal math version, this does not give the same as **\mathtt** would have given there. This was a bug: imagine **\section{ \mathtt{X} }** issued in a math version, but the TOC is done in subdued normal version; the output in TOC will often differ (fontsize being put aside) both from out it looked at the section title and from what direct usage of **\mathtt** in the TOC would have given. I have no strong preference between the two possibilities (to be as in section title, or to be as if **\mathtt** gets executed in TOC and obeys its local regime), but it is a bug if the result is still a third one. Thus I decided to follow L^AT_EX2e and that **\mathtt** had to remain **\mathtt** when moving.

But a math alphabet command such as **\Mathtt** redefines its unprotected meaning on first use as well as the one of the math version macro, hence a **\letrobustmacro\mathtt\Mathtt** of sorts is no good at all. I thus opted to not hack into the math L^AT_EX font support across math versions and to simply use **\protected\def** in place of obeying strictly L^AT_EX2e robustness (except of

course in the subdued math versions as there the math alphabets acquire back their original robust meanings.)

Potential breaking change at 1.3za, the `defaultbf` etc... options do not prevent the package declaring `\Mathbf` etc... commands.

1.3za defines a `\Mathnormalbold` and then defines `\mathnormalbold` in terms of it in place of defining directly `\mathnormalbold` as a math alphabet. This is in relation to implementation of the `LGRgreek+` option. There was some hesitation though to restrict this change to that option only or not.

```

525 \let\mst@alph@omicron\mathnormal
526 \@ifpackageloaded{fourier}{\ifslowed\else\let\mst@alph@omicron\mathrm\fi}{ }
527 \DeclareSymbolFontAlphabet{\Mathnormal}{mtletterfont}
528 \DeclareSymbolFontAlphabet{\Mathrm}{mtoperatorfont}
529   \DeclareMathAlphabet{\Mathnormalbold}{\mst@enc}{\mst@fam}{\mst@bold}{\mst@ltsh}
530   \protected\def\mathnormalbold{\Mathnormalbold}
531   \DeclareMathAlphabet{\Mathbf}{\mst@enc}{\mst@fam}{\mst@bold}{\mst@opsh}
532   \DeclareMathAlphabet{\Mathit}{\mst@enc}{\mst@fam}{\mst@ser}{\itdefault}
533   \DeclareMathAlphabet{\Mathsf}{\mst@enc}{\sfdefault}{\mst@ser}{\mst@opsh}
534   \DeclareMathAlphabet{\Mathtt}{\mst@enc}{\ttdefault}{\mst@ser}{\mst@opsh}

```

The `\mathxx` macros being L^AT_EX₂_ε robust, or course the meanings here are known, and «original» macros are sort of superfluous but well it works.

```

535 \let\mst@original@normal\mathnormal
536 \let\mst@original@rm\mathrm
537 \let\mst@original@bf\mathbf
538 \let\mst@original@it\mathit
539 \let\mst@original@sf\mathsf
540 \let\mst@original@tt\mathtt
541 \def\mst@restorealalphabets{% for subdued
542   \let\mathnormal\mst@original@normal
543   \let\mathrm\mst@original@rm
544   \let\mathbf\mst@original@bf
545   \let\mathit\mst@original@it
546   \let\mathsf\mst@original@sf
547   \let\mathtt\mst@original@tt
548 }
549 \ifmst@greekplus

```

`\mst@mathalph` The L^AT_EX kernel code regarding math fonts is too complex and rigid for there to be a robust and easy way to know when one is in the argument of `\mathrm` or `\mathbf`, and the code is spread on various chapters of `source2e.pdf`, and the comments are often not up-to-date. So I did not try a too complex hack and decided for 1.3za to add a numeric indicator to let Greek letters react to it. It incorporates a space to be self-delimiting in an `\ifcase` to maintain expandability in numeric context of the to-be-defined Greek control sequences.

```

550 \def\mst@mathalph{-1}
551 \def\mst@setalphabets{%
552   \protected\def
553     \mathnormalbold##1{\def\mst@mathalph{4 }\Mathnormalbold{##1}\def\mst@mathalph{-1 }}%
554   \ifmst@defaultnormal\else
555     \protected\def

```

```

556     \mathnormal##1{\def\mst@mathalph{0 }\Mathnormal{##1}\def\mst@mathalph{-1 }}%
557     \fi
558     \ifmst@defaulttrm\else
559     \protected\def
560     \mathrm##1{\def\mst@mathalph{1 }\Mathrm{##1}\def\mst@mathalph{-1 }}%
561     \fi
562     \ifmst@defaultbf\else
563     \protected\def
564     \mathbf##1{\def\mst@mathalph{2 }\Mathbf{##1}\def\mst@mathalph{-1 }}%
565     \fi
566     \ifmst@defaultit\else
567     \protected\def
568     \mathit##1{\def\mst@mathalph{3 }\Mathit{##1}\def\mst@mathalph{-1 }}%
569     \fi
570     \ifmst@defaultsf\else\protected\def\mathsf{\Mathsf}\fi
571     \ifmst@defaultttt\else\protected\def\mathtt{\Mathtt}\fi
572   }
573 \else
574   \def\mst@setalphabets{%
575     \ifmst@defaultnormal\else\protected\def\mathnormal{\Mathnormal}\fi
576     \ifmst@defaulttrm\else\protected\def\mathrm{\Mathrm}\fi
577     \ifmst@defaultbf\else\protected\def\mathbf{\Mathbf}\fi
578     \ifmst@defaultit\else\protected\def\mathit{\Mathit}\fi
579     \ifmst@defaultsf\else\protected\def\mathsf{\Mathsf}\fi
580     \ifmst@defaultttt\else\protected\def\mathtt{\Mathtt}\fi
581   }
582 \fi
583 \ifmst@subdued\else\mst@setalphabets\fi

```

LGRgreek
\MTgreekupdefault
\MTgreekitdefault
selfGreek

1.14b: We can not move the `\DeclareSymbolFont` to the `\Mathastext` macro because it resets the font family in **all** math versions, and some could have been defined by the user with previous calls to `\Mathastext`. So we have to have them here. The problem is that at this stage it is impossible to know if we really need (in the case of LGRgreek) two separate shapes for upper and lowercase, and (in the case of selfGreek) a shape distinct from the one used in `mtoperatorfont`. So I opted in the end for declaring possibly one too many font. To achieve more economy the only way would be to keep cumulative track of all previously declared math versions and to redeclare appropriately the LGR or self greek fonts at each call to `\Mathastext` (with no optional argument): a bit painful, and as I am possibly the sole user in the world of this possibility of multiple math versions with this package. Also the advantage to systematically allocate a font for the selfGreek option is that we can force the use of the OT1 encoding.

First we establish the cumulative effect of the greek related options.

1.15c introduces some possibilities to change the shapes of Greek letters in each math versions, and even the Greek font (in LGR encoding). The commands `\MTitgreek` etc... will be used in-between calls to `\Mathastext` and re-adjust the shapes. And the command `\MTgreekfont` changes the Greek font family.

Note that `\mst@ltsh` expands to `\shapedefault` or `\itdefault` at this location.

Note added 2022/11/02: using `\MTitgreek` etc... once implies that from then on, for subsequent `mathastext`-math versions, the shape of Greek letters will not be kept in sync with the shape and lettershape version parameters, but only react to the configuration decided by these

commands (and `italic/frenchmath` options).

Note 2022/10/29: for some time `\updefault` was made into `up` by L^AT_EX (since 2020-02-02 now that I check this out). As a result this triggered Font Warnings in the log about the replacement of `up` by `n`.

1.3x refactors completely the handling of Greek letter shapes under the `LGRgreek(s)` options (and only under them). Under these options we don't use one font for lowercase Greek and another one for uppercase Greek (some above code comments have not been updated) but one math font `mtgreekit` for italic Greek and one math font `mtgreekup` for upright Greek. What 'italic' and 'upright' mean is decided by the expansion of `\MTgreekitdefault` and `\MTgreekupdefault`, which give respectively `it` and `n` per default.

If no `itgreek` et al. options or `\MTitgreek` et al. commands have been used, we need to map `\mst@ltsh` (which was used for lowercase Greek, except under `frenchmath` option) and `\mst@opsh` to either 'italic' or 'upright'. This is done by testing if they hold 'it' or 'sl'. If yes we map to 'italic' by setting to false an 'up' Boolean, if not we leave the 'up' Boolean to true.

In order to maintain perfect identical code for non-LGRgreek, the LGRgreek related code is simply added to previously shared constructions. The LGRgreek behaviour will remain identical in most documents, but for example those who used some adventurous 'sc' for the main shape (the one used per default for operator names) need to adjust `\MTgreekupdefault` to be 'sc', for the math version being defined, or the default one if this is followed by usage of `\Mathastext`.

The new LGRgreek-specific commands `\MTgreekupdefault` and `\MTgreekitdefault` are the only ones in the package which can possibly be defined previously to loading it. (Perhaps some other macros could be also converted to being modifiable prior to loading `mathastext`, thus avoiding potential need to use `\Mathastext` at least once after loading the package; to be examined next time — which may be a long time in future!).

Unfortunately the 1.3x/1.3y did some internal renamings here (using `@lgr@` in macro names in place of `@greek@`) which were not everywhere followed up, and this broke the `selfGreek` option. Fixed at 1.3z.

```

584 \providecommand*\MTgreekupdefault{n}
585 \providecommand*\MTgreekitdefault{it}
586 \newif\ifmst@greek@lower@up
587 \newif\ifmst@greek@upper@up
588 \def\mst@update@greeksh{
589   \def\mst@greek@lsh{\mst@ltsh}
590   \def\mst@greek@ush{\mst@opsh}
591   \mst@greek@lower@uptrue
592   \expandafter\in@\expanded{{\mst@ltsh.}}{it.,sl.}%
593   \ifin@mst@greek@lower@upfalse\fi
594   \mst@greek@upper@uptrue
595   \expandafter\in@\expanded{{\mst@opsh.}}{it.,sl.}%
596   \ifin@mst@greek@upper@upfalse\fi
597   \ifmst@itgreek
598     \def\mst@greek@lsh{\MTgreekitdefault}
599     \def\mst@greek@ush{\MTgreekitdefault}
600     \mst@greek@lower@upfalse
601     \mst@greek@upper@upfalse
602   \fi
603   \ifmst@upgreek
604     \def\mst@greek@lsh{\MTgreekupdefault}
605     \def\mst@greek@ush{\MTgreekupdefault}

```

```

606     \mst@greek@lower@uptrue
607     \mst@greek@upper@uptrue
608   \fi
609   \ifmst@frenchmath
610     \ifmst@itgreek\else
611     \ifmst@upgreek\else
612       \def\mst@greek@lsh{\mst@opsh}
613       \def\mst@greek@ush{\mst@opsh}
614       \mst@greek@lower@uptrue
615       \mst@greek@upper@uptrue
616     \fi\fi
617   \fi
618   \ifcase\mst@greek@select
619     \or
620       \def\mst@greek@ush{\MTgreekitdefault}
621       \mst@greek@upper@upfalse
622     \or
623       \def\mst@greek@ush{\MTgreekupdefault}
624       \mst@greek@upper@uptrue
625   \fi
626 }
627 \mst@update@greeksh

```

`mtgreekup` The 1.3x refactoring was done in order to be able to define `\alphaup`, etc ... control sequences
`mtgreekit` (`\mathchar`'s), as well as the italic ones. Formerly two math fonts were created but to be used
`\mathgreekup` respectively with lowercase or uppercase Greek. Now we have two fonts indexed by their shape,
`\mathgreekit` and we take advantage to create two math alphabets mapping to the two defined symbol fonts
`\mathgreekupbold` `mtgreekup` and `mtgreekit`.
`\mathgreekitbold` 1.3za adds `\mathgreekupbold` and `\mathgreekitbold`.

```

628 \ifmst@LGRgreek
629   \DeclareFontEncoding{LGR}{-}{-}
630   \DeclareSymbolFont{mtgreekup}{LGR}{\mst@fam}{\mst@ser}{\MTgreekupdefault}
631   \DeclareSymbolFont{mtgreekit}{LGR}{\mst@fam}{\mst@ser}{\MTgreekitdefault}
632   \DeclareSymbolFontAlphabet{\mathgreekup}{mtgreekup}
633   \DeclareSymbolFontAlphabet{\mathgreekit}{mtgreekit}
634   \DeclareMathAlphabet{\mathgreekupbold}{LGR}{\mst@fam}{\mst@bold}{\MTgreekupdefault}
635   \DeclareMathAlphabet{\mathgreekitbold}{LGR}{\mst@fam}{\mst@bold}{\MTgreekitdefault}
636 \else

```

`mtselfGreeffont`

```

637 \ifmst@selfGreek
638   \DeclareSymbolFont{mtselfGreeffont}{OT1}{\mst@fam}{\mst@ser}{\mst@greek@ush}
639 \fi\fi

```

`mteulervm` In case we need the Euler font, we declare it here. It will use `uzeit.fd` from the `eulervm` package
`\MathEuler` of Walter SCHMIDT
`\MathEulerBold`

```

640 \ifmst@needeuler\mst@infoline{will use Euler font; command \string\MTEulerScale}
641 \DeclareSymbolFont{mteulervm}{U}{zeit}{m}{n}
642 \DeclareSymbolFontAlphabet{\MathEuler}{mteulervm}

```

```

643 \DeclareMathAlphabet{\MathEulerBold}{U}{zeur}{\mst@bold}{n}
644 \fi
645 \newcommand*\MTEulerScale[1]{\edef\zeu@Scale{#1}}
646 \let\MathastextEulerScale\MTEulerScale

```

L^AT_EX 2_ε has a strange initial configuration where the capital Greek letters are of type `mathalpha`, but the lower Greek letters are of type `mathord`, so that `\mathbf` does not act on them, although lowercase Greek letters and Latin letters are from the same font. This is because `\mathbf` is set up to be like a bold version of `\mathrm`, and `\mathrm` uses the ‘operators’ font, by default `cmr`, where there are NO lowercase greek letters. This set-up is ok for the Capital Greek letters which are together with the Latin letters in both `cmmi` and `cmr`.

The package `eulervm` sets the lowercase Greek letters to be of type `mathalpha`, the default `\mathbf` and `\mathrm` will act wierdly on them, but a `\mathbold` is defined which will use the bold series of the Euler roman font, it gives something coherent for Latin and Greek *lowercase* letters, and this is possible because the same font contains upright forms for them all.

Here in `mathastext`, Latin letters and Greek letters (lower and upper case) must be (generally) assumed to come from two different fonts, as a result the standard `\mathbf` (and `\mathrm`) will give weird results when used for Greek letters. We could coerce `\mathbf` to do something reasonable (cf <http://tug.org/pipermail/texhax/2011-January/016605.html>) but at this time 30-01-2011 09:42:27 CET I decided I would not try to implement it here. I prefer to respect the default things.

I followed the simpler idea of the `eulervm` package and defined `\MathEuler` and `\MathEuler-Bold` alphabet commands (the `eulervm` package does this only for the bold font).

`mtpsymbol` `\MathPSymbol` In case we need the Symbol font, we declare it here. The macro `\psy@scale` will be used to scale the font (see at the very end of this file).

```

647 \ifmst@needsymbol\mst@infoline{will use Symbol font; command \string\MTSymbolScale}
648 \def\psy@scale{1}
649 \DeclareSymbolFont{mtpsymbol}{U}{psy}{m}{n}
650 \DeclareSymbolFontAlphabet{\MathPSymbol}{mtpsymbol}
651 \AtBeginDocument{%
652   \DeclareFontFamily{U}{psy}{}%
653   \DeclareFontShape{U}{psy}{m}{n}{<->s*[\psy@scale] psy}{}%
654 }
655 \fi
656 \newcommand*\MTSymbolScale[1]{\edef\psy@scale{#1}}
657 \let\MathastextSymbolScale\MTSymbolScale

```

I did not choose for name `\MathSymbol` as this may be defined somewhere for another thing. There is no bold for the postscript Symbol font distributed with the L^AT_EX 2_ε `psnffs` core package.

`\pmvec` Definition of a poor man version of the `\vec` accent

```

658 \DeclareRobustCommand*\pmvec[1]{\mathord{\stackrel{\raisebox{-.5ex}}{\tiny\boldmath$}}{\rightarrow}}{#1}}
659

```

`\fouriervec` The glyph is taken from the Fourier font of Michel BOVANI. Note: (oct 2012) I should not allocate an entire symbol font just for one glyph! But I have not given any serious thought to what one can do to simulate a math accent without doing such a wasteful thing.

```

660 \ifmst@fouriervec

```

```

661 \DeclareFontEncoding{FML}{-}{-}
662 \DeclareFontSubstitution{FML}{futm}{m}{it}
663 \DeclareSymbolFont{mathastextfourier}{FML}{futm}{m}{it}
664 \SetSymbolFont{mathastextfourier}{bold}{FML}{futm}{b}{it}
665 \mst@DeclareMathAccent{\fouriervec}{\mathord}{mathastextfourier}{"7E}
666 \fi

```

`\MTencoding` Some public macros to modify our private internals, and we will use them also ourself.

`\MTfamily` In version 1.1 we add the possibility to have two distinct font shapes for letters and digits.

`\MTseries` So in fact we could as well have two really unrelated fonts but this is really not the spirit of the package.

`\MTshape`

`\MTboldvariant` Note that using these macros in the preamble allows `\Mathastext` to set up math versions with a given font for math mode, and at the same time not modifying the `\familydefault` or `\romandefault` etc...

`\MTlettershape`

At time of 1.3za I considered letting `LGRgreeks` and `selfGreeks` support `\MTgreekfont` and this needed a change to `\MTfamily` here but I dropped the idea. Too wary of documentation changes.

```

667 \newcommand* \MTencoding [1]{\def \mst@enc{#1}}
668 \newcommand* \MTfamily [1]{\def \mst@fam{#1}}
669 \newcommand* \MTseries [1]{\def \mst@ser{#1}}
670 \newcommand* \MTshape [1]{\def \mst@opsh{#1}\ifmst@italic\else\def \mst@ltsh{#1}\fi}
671 \newcommand* \MTboldvariant [1]{\def \mst@bold{#1}}
672 \newcommand* \MTlettershape [1]{\def \mst@ltsh{#1}}
673 \let \Mathastextencoding \MTencoding
674 \let \Mathastextfamily \MTfamily
675 \let \Mathastextseries \MTseries
676 \let \Mathastextshape \MTshape
677 \let \Mathastextboldvariant \MTboldvariant
678 \let \Mathastextlettershape \MTlettershape

```

`\MTitgreek` 1.15c: These new macros can be used in-between calls to `\Mathastext`. They reset the

`\MTupgreek` shapes for Greek letters (applies to `LGRgreek(s)` and `selfGreek(s)` options). The `\MTgreekfont`

`\MTitGreek` presupposes either `LGRgreek` or `selfGreek` (it is inoperant under `LGRgreeks` or `selfGreeks`).

`\MTupGreek` `\MTgreekfont{\familydefault}` is somewhat like using `LGRgreeks` or `selfGreeks`.

`\MTgreekfont` At time of 1.3za I let `\MTgreekfont` also have an effect under option `LGRgreeks` or `selfGreeks`, via a refactoring which also modified `\MTfamily`.

```

679 \newcommand* \MTitgreek{\mst@itgreektrue \mst@upgreekfalse \def \mst@greek@select{0}}
680 \newcommand* \MTupgreek{\mst@upgreektrue \mst@itgreekfalse \def \mst@greek@select{0}}
681 \newcommand* \MTitGreek{\def \mst@greek@select{1}}
682 \newcommand* \MTupGreek{\def \mst@greek@select{2}}
683 \let \Mathastextitgreek \MTitgreek
684 \let \Mathastextupgreek \MTupgreek
685 \let \MathastextitGreek \MTitGreek
686 \let \MathastextupGreek \MTupGreek
687 \newcommand* \MTgreekfont [1]{\def \mst@greekfont{#1}}
688 \let \Mathastextgreekfont \MTgreekfont

```

At (long...) last we now change the font for the letters of the latin alphabet. In version 1.1, Latin letters have their own font (shape).

1.2b initiated the use of mathematically active letters to insert the italic corrections. With version 1.3 the use of math active letters is also for extra muglue added before and after the letters. Use of \@for to shorten the code initiated with release 1.3.

```

689 \def\mst@DeclareMathLetter #1{%
690   \DeclareMathSymbol {#1}{\mathalpha}{mtletterfont}{`#1}%
691   \expandafter
692   \DeclareMathSymbol \csname mst@#1\endcsname{\mathalpha}{mtletterfont}{`#1}%
693   \expandafter\mst@addtodo@az\expandafter #1\csname mst@#1\endcsname
694 }%
695 \@for\mst@tmp:=abcdefghijklmnopqrstuvwxy\do
696   {\expandafter\mst@DeclareMathLetter\mst@tmp}%
697 \ifmst@frenchmath \def\mst@font@tbu{mtoperatorfont}%
698   \else           \def\mst@font@tbu{mtletterfont}%
699 \fi
700 \def\mst@DeclareMathLetter #1{%
701   \DeclareMathSymbol {#1}{\mathalpha}{\mst@font@tbu}{`#1}%
702   \expandafter
703   \DeclareMathSymbol \csname mst@#1\endcsname{\mathalpha}{\mst@font@tbu}{`#1}%
704   \expandafter\mst@addtodo@AZ\expandafter #1\csname mst@#1\endcsname
705 }%
706 \@for\mst@tmp:=ABCDEFGHJKLMNOPQRSTUVWXYZ\do
707   {\expandafter\mst@DeclareMathLetter\mst@tmp}%
708 \let\mst@DeclareMathLetter\relax
709 \ifmst@nodigits\else
710 \def\mst@font@tbu{mtoperatorfont}%

```

In version 1.1, we have now separated digits from letters, so paradoxically it is less problematic to give them the mathalpha type.

```

711 \ifmst@symboldigits \def\mst@font@tbu{mtpsymboll} \fi
712 \ifmst@eulerdigits \def\mst@font@tbu{mteulervm} \fi
713 \DeclareMathSymbol{0}{\mathalpha}{\mst@font@tbu}{`0}%
714 \DeclareMathSymbol{1}{\mathalpha}{\mst@font@tbu}{`1}%
715 \DeclareMathSymbol{2}{\mathalpha}{\mst@font@tbu}{`2}%
716 \DeclareMathSymbol{3}{\mathalpha}{\mst@font@tbu}{`3}%
717 \DeclareMathSymbol{4}{\mathalpha}{\mst@font@tbu}{`4}%
718 \DeclareMathSymbol{5}{\mathalpha}{\mst@font@tbu}{`5}%
719 \DeclareMathSymbol{6}{\mathalpha}{\mst@font@tbu}{`6}%
720 \DeclareMathSymbol{7}{\mathalpha}{\mst@font@tbu}{`7}%
721 \DeclareMathSymbol{8}{\mathalpha}{\mst@font@tbu}{`8}%
722 \DeclareMathSymbol{9}{\mathalpha}{\mst@font@tbu}{`9}%
723 \fi

```

When symboldelimiters is passed as an option, we use the Symbol font for the printable characters other than letters and digits.

```

724 \ifmst@symboldelimiters
725 \def\mst@font@tbu{mtpsymboll}%
726 \mst@endashfalse
727 \mst@emdashfalse
728 \else
729 \def\mst@font@tbu{mtoperatorfont}%

```

730 \fi

1.2 adds the tricks to let non letters/digits obey math alphabets. We have to double the definitions for easy switch on-off of the mechanism, via a token list which is put into `\everymath` and `\everydisplay`.

```
731 \ifmst@noexclam\else\mst@infoline{\string! and \string?}%
732 \DeclareMathSymbol{!}{\mathclose}{\mst@font@tbu}{"21}%
733 \DeclareMathSymbol{\mst@varfam@exclam}{\mathalpha}{\mst@font@tbu}{"21}%
734 \expandafter\mst@addtodo@nonletters\string!\mathclose\mst@varfam@exclam
735 \DeclareMathSymbol{?}{\mathclose}{\mst@font@tbu}{"3F}%
736 \DeclareMathSymbol{\mst@varfam@question}{\mathalpha}{\mst@font@tbu}{"3F}%
737 \expandafter\mst@addtodo@nonletters\string?\mathclose\mst@varfam@question
738 \fi
```

`\MTlowerast` 1.12d The `\ast` or `*` is defined in `fontmath.ltx` as a binary operator from the `symbols` font. Usually the asterisk from the text font is in a raised position. Previous versions of `mathastext` did nothing with `\ast` but strangely defined `*` to be the one from the text font, with type `\mathalpha`. The package now leaves by default both `*` and `\ast` untouched, and if passed option `asterisk` replaces both of them with a lowered text asterisk (or the one from the Symbol font), and of type `\mathbin`. A trick is used to optionally get both `*` and `\ast` obey the math alphabets.

The user macro `\MTlowerast` sets the amount of lowering to be applied to the text asterisk.

1.12e Somehow there was a big omission in 1.12d, the command `\MTlowerast` as described in the manual was missing!

nota bene: it is assumed that `*` is of type `other` when `mathastext` is loaded... it should neither be active, nor of type `letter`!

1.3i adds `\MTnormalasterisk` and `\MTactiveasterisk`. They do nothing without option `asterisk`.

```
739 \def\mst@@doasterisk{\let\ast\mst@ast\mst@mathactivate*{\}\mst@ast}%
740 \newcommand*\MTnormalasterisk {\let\mst@doasterisk\relax}
741 \newcommand*\MTactiveasterisk {\let\mst@doasterisk\mst@@doasterisk}
742 \ifmst@asterisk\mst@infoline{asterisk: \string\ast\space and *}
743   \AtBeginDocument{%
744     \everymath\expandafter
745       {\the\everymath   \mst@doasterisk \MTnormalasterisk }%
746     \everydisplay\expandafter
747       {\the\everydisplay\mst@doasterisk \MTnormalasterisk }}
748   \ifmst@symbolmisc
749     \def\mst@bin@ast{%
750       \mathbin{\mathchoice{\raisebox{-0.1\height}%
751         {\the\textfont\symmtpsymbol\char42}}%
752         {\raisebox{-0.1\height}%
753           {\the\textfont\symmtpsymbol\char42}}%
754         {\raisebox{-0.1\height}%
755           {\the\scriptfont\symmtpsymbol\char42}}%
756         {\raisebox{-0.1\height}%
757           {\the\scriptscriptfont\symmtpsymbol\char42}}}}%
758     \else
759       \def\mst@bin@ast{%
760         \mathbin{\mathchoice{\raisebox{-\mst@lowerast}%
```



```

790 \ifmst@decimalcomma
791 \mst@infoline{loading package decimalomma for `smart comma\string'}
792 \RequirePackage{decimalcomma}[2023/12/28]% 1.3 or later

```

Attention that the breaking behavior of `\AtBeginDocument` at October 2020 L^AT_EX release means that, *taking into account that `mathastext` already has employed some `\AtBeginDocument` prior to loading `decimalcomma`*, any code here will be executed **BEFORE** the `\AtBeginDocument` material from `decimalcomma`!

<https://github.com/latex3/latex2e/issues/1226>

So we definitely should not do here some `\mathcode`\,="8000\relax` in the `\AtBeginDocument`, and by the way I don't even recall why I had this line at some point which ended up causing me some much suffering and pain and lost sleep. It seems to have been a silly copy-paste from the `nccomma` branch next, and that I started experimenting before having even re-read the code I copied pasted and whether it was needed.

`decimalcomma` is a rewrite of `icomma` and it loads the latter for which `babel-french` has a detection mechanism, which as a result avoids the bad interactions with `numprint` plus its `autolanguage` option, which are mentioned below in the `nccomma` branch. So we don't need here the workaround done below is in the `nccomma` branch. Notice though that in both cases, the 'intelligent' comma feature will be applied to the whole document, even inside those portions where the user has switched to another language such as English. This is to be expected here as nothing is done in a language specific manner, but if we wanted to do so, we might then be confronted with the `babel` issue mentioned next in the `nccomma` branch.

```

793 \let\mathcomma\relax
794 \DeclareMathSymbol{\mathcomma}{\mathpunct}{\mst@font@tbu}{"2C}

```

Due to package `decimalcomma` internals, the hack here, which has to do with the "non letters obey math alphabets" optional `mathastext` feature, has to be done differently than the one we apply below for `nccomma`. One can not really talk of a hack, as we basically have to redo the whole thing to insert an `\aftergroup` trick.

```

795 \def\mst@sm@rtcomma{\begingroup\@tfor\@tempa:=0123456789%
796 \do{\expandafter\ifx\@tempa\@let@token
797 \aftergroup\mathord
798 \aftergroup\@gobble
799 \@break@tfor\fi}%
800 \endgroup\mathpunct\mathcomma}
801 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
802 \let\mathcomma\mst@varfam@comma
803 \let\sm@rtcomma\mst@sm@rtcomma
804 }
805 \else % end of decimalcomma branch
806 \ifmst@nccomma
807 \mst@infoline{loading package nccomma for `smart comma\string'}
808 \RequirePackage{nccomma}%

```

Work around some bad interaction of `nccomma`, `numprint` with `autolanguage` and `babel-french`. See

<https://github.com/latex3/babel/issues/190>

for background. Some hesitation whether I should use the `\noextrsfrench` to work around `babel-french` code influencing non-French sections in the document. Update: I think the last sentence means I was hesitating at time of 1.3x whether to insert some extra code inside the `\noextrsfrench`.

```

809 \AtBeginDocument{%
810   \mathcode`\,="8000\relax
811   \@ifpackageloaded{babel}{%
812     \addto\noextrsfrench{\mathcode`\,="8000\relax}%
813     \addto\extrsfrench{\mathcode`\,="8000\relax}%
814   }{}%
815 }
816 \let\mathcomma\relax
817 \DeclareMathSymbol{\mathcomma}{\mathpunct}{\mst@font@tbu}{"2C}

```

Complications for compatibility with the `\MTnonlettersobeymathxx` mechanism. No fix done here for usage by `ncccomma` of `\@tempb` with no restoration of its meaning.

```

818 \edef\mst@NCC@comma{\let\noexpand\@empty\mathpunct
819   \unexpanded\expandafter{\NCC@comma}%
820   \let\noexpand\@empty\noexpand\empty}
821 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
822   \let\mathcomma\mst@varfam@comma
823   \let\NCC@comma\mst@NCC@comma
824 }
825 \else % neither ncccomma nor decimalcomma
826   \expandafter\mst@addtodo@nonletters\string,\mathpunct\mst@varfam@comma
827 \fi\fi
828 \DeclareMathSymbol{.}{\mathord}{\mst@font@tbu}{"2E}
829 \DeclareMathSymbol{\mst@varfam@dot}{\mathalpha}{\mst@font@tbu}{"2E}
830 \mst@addtodo@easynonletters\.\mst@varfam@dot
831 \DeclareMathSymbol{:}{\mathrel}{\mst@font@tbu}{"3A} % relation spacing
832 \DeclareMathSymbol{\mst@varfam@colon}{\mathalpha}{\mst@font@tbu}{"3A}
833 \expandafter\mst@addtodo@nonletters\string:\mathrel\mst@varfam@colon
834 \@ifpackageloaded{amsmath}
835 {} % \colon defined in amsmath.sty in terms of : with some enlarged explicit
836 % spacing. No need to intervene.
837 {% no amsmath, use standard punctuation spacing
838   \let\colon\undefined
839   % the reason is if some package has redefined \colon which then
840   % can not be used in \cs{DeclareMathSymbol} anymore (we
841   % shamelessly overwrite...)
842   \DeclareMathSymbol{\colon}{\mathpunct}{\mst@font@tbu}{"3A}
843   \mst@do@nonletters\expandafter{\the\mst@do@nonletters

```

1.3v uses `\protected` for the (optional) `\colon` redefinition.

```

844     \protected\def\colon{\mathpunct{\mst@varfam@colon}}}%
845 }
846 \DeclareMathSymbol{\mst@varfam@pointvirgule}{\mathalpha}{\mst@font@tbu}{"3B}

```

1.3x adds `binarysemicolon` option.

```

847 \ifmst@binarysemicolon
848   \mst@infoline{semi-colon set to be of type \string\mathbin}
849   \DeclareMathSymbol{;}{\mathbin}{\mst@font@tbu}{"3B}
850   \expandafter\mst@addtodo@nonletters\string;\mathbin\mst@varfam@pointvirgule
851 \else
852   \DeclareMathSymbol{;}{\mathpunct}{\mst@font@tbu}{"3B}

```

```

853 \expandafter\mst@addtodo@nonletters\string;\mathpunct\mst@varfam@pointvirgule
854 \fi % binarysemicolon
855 \fi % end \ifmst@nopunct else branch

```

`\relbar` Due to the way = and - are used by L^AT_EX in arrows, we will have to redefine `\Relbar` and `\relbar` in order for them to preserve their original meanings.

1.15d: Oct 13, 2012. Belated amendment of the code to be compatible with Unicode engines in case someone changed the mathcode of -. However, for the time being I can do it in an easy way only for X_YL^AT_EX, not for LuaL^AT_EX. Also I do my modifications to `\relbar` in a manner testing for the presence of `amsmath`.

1.3v 2019/09/19: L^AT_EX of 2019-10-01 defines `\leftarrowfill` and `\rightarrowfill` as robust macros, so we do the same.

I need to put `amsmath` under surveillance to check if it decides to robustify `\relbar` at some point, now that the L^AT_EX team has taken over maintenance.

2019/09/16 Use `\protected` for `\right|leftarrowfill` in the non `\DeclareRobustCommand` branch?

```

856 \ifmst@nominus
857 \else
858 \ifmst@XeOrLua
859 \mst@Umathcharnumdef\mst@minus@sign=\mst@Umathcodenum`\-\relax
860 %^A I used this prior to the new \luatexUmathcodenum, as available since TL2013:
861 %^A \mathchardef\mst@minus@sign=8704\relax % "2200
862 \else
863 \mathchardef\mst@minus@sign=\mathcode`\-\relax
864 \fi
865 \@ifpackageloaded{amsmath}
866 {\def\relbar{\mathrel{\mathpalette\mathsm@sh\mst@minus@sign}}}
867 {\DeclareRobustCommand\relbar{\mathrel{\smash\mst@minus@sign}}}
868 \ifmst@robust@obsessed@LaTeX@era\expandafter\DeclareRobustCommand
869 \else\expandafter\def\fi
870 \rightarrowfill{\m@th\mathord{\relbar}\mkern-7mu%
871 \cleaders\hbox{\mkern-2mu\relbar\mkern-2mu}\hfill
872 \mkern-7mu\mathord\rightarrow$}
873 \ifmst@robust@obsessed@LaTeX@era\expandafter\DeclareRobustCommand
874 \else\expandafter\def\fi
875 \leftarrowfill{\m@th\mathord\leftarrow\mkern-7mu%
876 \cleaders\hbox{\mkern-2mu\relbar\mkern-2mu}\hfill
877 \mkern-7mu\mathord{\relbar}$}
878 \fi

```

`endash` 1.1 2011/01/29: Producing this next piece of code was not a piece of cake for a novice like myself!

1.11 2011/02/05: Compatibility with Unicode (via use of `fontspec` encodings EU1 and EU2)

1.12 2011/02/07: Improved dealing of Unicode possibility.

1.14b 2011/04/02: Corrected some very irresponsible bug in the Unicode part which caused a problem when 10 or more math families have been allocated.

1.15 2012/09/24: Added `AtBeginDocument` to circumvent some `amsmath` problem with unicode engines.

1.31 2016/01/29: anticipating TL2016 `fontspec`'s switch to TU.

1.3t 2018/08/22: fix to very ancient (2012/12/20) bug with `\DeclareMathSymbol` lacking last argument if encoding not T1, OT1 or LY1 when setting up math mode to use the en-dash character as minus sign (PDF_TE_X engine).

`\mst@subduedminus` 1.3t Further, new macros `\mst@subduedminus` and `\mst@nonsubduedminus`, for the good functioning of the subdued option also in case of presence of `fontspec`. This is the only character for which subdued option works (now) by setting the mathcode on each math version change. Indeed, a typical issue is when the Unicode EN DASH or MINUS is used, but the actual font in subdued normal math version is originally in OT1 or T1 encoding. The only reasonable way to address this is by actually modifying the assigned mathcode at each version change. This means also that `\MTversion` and not `\mathversion` must be used for good functioning.

1.3u improves the handling of the minus sign by letting it be compatible with math versions (and not only with the with subdued mechanism but all math versions) having varying font encodings, even possibly classic 8bit font encoding mixed with TU encoding for Unicode engines. For this it is needed to work around a feature of XeTeX/LuaLaTeX, here is original comment:

afaict it is impossible to use straightforwardly in extended mathcode assignments a control sequence as created by `\Umathchardef`. This is counter-intuitive and breaks expectations.

But the 1.3u mechanism with `\mst@UmathchardefWorkAround@i` introduced a bug which showed under option `noendash` (hence also `symboldelimiters`) with Unicode engines. Fixed at 1.3w.

```

879 \let\mst@subduedminus\empty
880 \let\mst@nonsubduedminus\empty
881 \def\mst@dothe@endashstuff#1#2#3{%
882   \edef\mst@tmp@enc{#3}%
883   \if1\mst@OneifUniEnc
884     \mst@Umathchardef#1=2 \symmoperatorfont "\mst@unicodeminus\relax
885     \mst@Umathchardef#2=7 \symmoperatorfont "\mst@unicodeminus\relax
886   \else
887     \DeclareMathSymbol{#1}{\mathbin}{moperatorfont}
888       {\csname\mst@tmp@enc\string\textendash\endcsname}
889     \DeclareMathSymbol{#2}{\mathalpha}{moperatorfont}
890       {\csname\mst@tmp@enc\string\textendash\endcsname}
891   \fi}% mst@dothe@endashstuff
892 \def\mst@dothe@emdashstuff#1#2#3{%
893   \edef\mst@tmp@enc{#3}%
894   \if1\mst@OneifUniEnc
895     \mst@Umathchardef#1=2 \symmoperatorfont "2014\relax
896     \mst@Umathchardef#2=7 \symmoperatorfont "2014\relax
897   \else
898     \DeclareMathSymbol{#1}{\mathbin}{moperatorfont}
899       {\csname\mst@tmp@enc\string\textemdash\endcsname}
900     \DeclareMathSymbol{#2}{\mathalpha}{moperatorfont}
901       {\csname\mst@tmp@enc\string\textemdash\endcsname}
902   \fi}% mst@dothe@emdashstuff
903 \def\mst@dothe@hyphenstuff#1#2{%
904   \DeclareMathSymbol{#1}{\mathbin}{\mst@font@tbu}{"2D}%
905   \DeclareMathSymbol{#2}{\mathalpha}{\mst@font@tbu}{"2D}%

```

```

906 }%
907 \def\mst@varfam@minus{\@nameuse{mst@varfam@minus@mv\math@version}}%
908 \ifmst@nominus\else
909   \expandafter\mst@addtodo@nonletters\string-\mathbin\mst@varfam@minus
910   \def\mst@nonsubduedminus{%
911     \edef\mst@tmp@enc{\csname mst@encoding@\math@version\endcsname}%
912     \if1\mst@OneifUniEnc
913       \mst@Umathcode`\--\expandafter
914         \mst@UmathchardefWorkAround@i
915         \csname mst@minus@mv\math@version\endcsname
916         \relax
917     \else
918       \mathcode`\--\@nameuse{mst@minus@mv\math@version}% self-delimiting
919     \fi
920   }% \mst@nonsubduedminus

```

The above works only if the `\mst@minus@mv<name>` was really defined via `\Umathchardef`. If it was defined via `\DeclareMathSymbol` then it is a `\mathchar`, not a `\Umathchar`. At least currently (2019). So we need to correct the definition of `\mst@nonsubduedminus`.

```

921   \ifmst@endash\else\ifmst@emdash\else
922     \def\mst@nonsubduedminus{%
923       \mathcode`\--\@nameuse{mst@minus@mv\math@version}% self-delimiting
924     }% non Umathchardef \mst@minus@mv<mathversion> macros
925   \fi\fi
926 \fi
927 \def\mst@UmathchardefWorkAround@i
928   {\expandafter\mst@UmathchardefWorkAround@ii\meaning}%
929 \def\mst@UmathchardefWorkAround@ii#1{""}%

```

`\mst@hbar@mvnormal`
`\mst@ltbar@mvnormal`

2011/01/31, 1.1 I decide to settle the question of the `\hbar`. The \LaTeX definition is `\def\hbar{\mathchar'26\mkern-9mu\h}` and its advantage is that `h` is in the correct font. But of course not the macron character (`\=`, `\bar`). And anyway `amsfonts` uses a `\DeclareMathSymbol`. Also there is the kern whose length depends on `cmsy` (`18mu=1em` and `em` taken from `info` in `cmsy`).

I will need an `rlap` adapted to math mode, and this is provided by code from Alexander R. PERLIS in his `TugBoat` article 22 (2001), 350–352, which I found by googling `rlap`. (as an aside, I am only now (April 2, 2011) aware that the package `mathtools` provides the `mathrlap` etc...)

1.3l 2016/01/29: anticipating TL2016 fontspec’s switch to TU.

1.3u 2019/08/20: encoding (8bits) agnostic construct for `hbar`, using same method as for `mathaccents` option. I should add some way to adjust the vertical positioning.

On this occasion I replace `h` by `\mst@h` because the mechanism for before and after skips does not interact well with the `rlap` construct.

1.3v 2019/09/19 adapts to maintain the robustness of `\hbar` which now applies with \LaTeX 2019–10–01.

1.3w works around <https://github.com/latex3/latex2e/issues/216> via `\mst@DeclareMathAccent`. The upstream bug affected the definition of `\mst@ltbar@mvnormal` and broke usage of `\Mathastext` in preamble.

1.3w also fixes oversight that `\hbar` may have been redefined via `\DeclareMathSymbol` by some package (e.g. `amsfonts`) and with \LaTeX 2019–10–01 this means `\hbar<space>` is now

undefined. Modifying it changed nothing to `\hbar` behaviour in such circumstances. Finally we opt for a `\protected \hbar` and choose to ignore completely if there is a `\hbar<space>` or not. To avoid extra steps we do not undefine it if it exists, because we would need to restore it in subdued math versions.

```

930 \let\mst@subduedhbar\@empty
931 \let\mst@nonsubduedhbar\@empty
932 \ifmst@nohbar\else
933   \def\mst@subduedhbar{\let\hbar\mst@original@hbar}%
934   \def\mst@nonsubduedhbar{\expandafter
935     \let\expandafter\hbar\csmname mst@hbar@mv\math@version\endcsname}%
936 \fi
937 \def\mst@mathrlap{\mathpalette\mst@mathrlapinternal}
938 \def\mst@mathrlapinternal#1#2{\rlap{${\mathsurround=0pt#1{#2}$}}
939 \def\mst@dothe@hbarstuff#1#2#3{%
940   \edef\mst@tmp@enc{#3}%
941   \if1\mst@OneifUniEnc % Unicode engine and font
942     \mst@Umathchardef#1="7 \symmtletterfont "0127 \relax %% or 210F?
943   \else
944     \begingroup
945     \def\@text@composite##1\@text@composite##2{##2}%
946     \let\add@accent\@firstoftwo
947     \mst@DeclareMathAccent{#2}{\mathalpha}{mtletterfont}%
948     {\csmname\mst@tmp@enc\string\=\endcsname{}}%
949   \endgroup
950   \protected\def#1{\mst@mathrlap{#2{\ }}\mst@h}%
951 \fi
952 }% end of \mst@dothe@hbarstuff

```

1.15d: Oct 13, 2012. The `\mathcode` thing with `=` is (belatedly, sorry!) made Unicode compatible.

`+,=\, \Relbar`

```

953 \ifmst@noplus\else\mst@infoline{\string+ and \string=}
954 \DeclareMathSymbol{+}{\mathbin}{\mst@font@tbu}{"2B}
955 \DeclareMathSymbol{\mst@varfam@plus}{\mathalpha}{\mst@font@tbu}{"2B}
956 \expandafter\mst@addtodo@nonletters\string+\mathbin\mst@varfam@plus
957 \fi
958 \ifmst@noequal\else
959 \ifmst@XeOrLua
960   \mst@Umathcharnumdef\mst@equal@sign=\mst@Umathcodenum`\=\relax
961 \else
962   \mathchardef\mst@equal@sign=\mathcode`\=\relax
963 \fi
964 \@ifpackageloaded{amsmath}
965 {\def\Relbar{\mathrel\mst@equal@sign}}
966 {\DeclareRobustCommand\Relbar{\mathrel{\mst@equal@sign}}}
967 \DeclareMathSymbol{=}{\mathrel}{\mst@font@tbu}{"3D}
968 \DeclareMathSymbol{\mst@varfam@equal}{\mathalpha}{\mst@font@tbu}{"3D}

```

`\nfss@catcodes` 2012/12/18: Activating `=` (only in math mode actually) seems very bad but surprisingly works

well. However I had a problem with `eu2lmtt.fd` which should not be loaded with an active `=`. 2012/12/25: Since then I had switched to only math activation. And in fact the problematic `=` from `eu2lmtt.fd` end up in `\csname...\endcsname` and I have learnt since that \TeX does not look at the `mathcode` inside a `\csname...\endcsname`. Example:

```
% \mathcode`x="8000
% \begingroup
% \catcode`x=\active
% \global\everymath{\defx{Hello}}
% \endgroup
% \def\foox{World!}
% $x \csname foox\endcsname$
%
```

We need nevertheless to inactivate the `=`, for the following reason. Imagine someone did `\catcode`==\active\def={\string=}`, or another definition which would not lead to a tragedy in a `\csname...\endcsname`. Then the `=` is active and the re-definition done by `mathastext` will not be compatible with loading `eu2lmtt.fd` (for the first time) from math mode, as this re-definition can not be expanded inside a `\csname...\endcsname`.

2012/12/28: to be on the safe side, I add also `;` and `+` and do it without discriminating between engines

```
969 \mst@infoline{adding \string= \string; and \string+ to \string\nfss@catcodes}
970 \g@addto@macro\nfss@catcodes{%
971   \@makeother\=%
972   \@makeother\;%
973   \@makeother\+%
974 }
975 \expandafter\mst@addtodo@nonletters\string=\mathrel\mst@varfam@equal
976 \fi
```

`noparenthesis` `\lbrack` and `\rbrack` are defined in `latex.ltx` by `\def\lbrack{[}\def\rbrack{]}` so this fits well with what we do here. `\lparen` and `\rparen` are similarly defined in `mathtools`. On the other hand in `latex.ltx` with `\{` and `\}` are defined (in math mode) in terms of the control sequences `\lbrace` and `\rbrace`. Such control sequences can not be simultaneously math symbols and math delimiters, thus, this complicates things for the `mathastextification`.

```
977 \ifmst@noparen\else\mst@infoline{parentheses \string( \string) \string[ \string] and slash
978 \ifmst@nosmallldelims
979   \DeclareMathSymbol{(\mathopen}{\mst@font@tbu}{"28}
980   \DeclareMathSymbol{)}{\mathclose}{\mst@font@tbu}{"29}
981   \DeclareMathSymbol{[\mathopen}{\mst@font@tbu}{"5B}
982   \DeclareMathSymbol{]}\mathclose}{\mst@font@tbu}{"5D}
983   \DeclareMathSymbol{/}\mathord}{\mst@font@tbu}{"2F}
984 \else
985   \DeclareMathDelimiter{(\mathopen}{\mst@font@tbu}{"28}{largesymbols}{"00}
986   \DeclareMathDelimiter{)}{\mathclose}{\mst@font@tbu}{"29}{largesymbols}{"01}
987   \DeclareMathDelimiter{[\mathopen}{\mst@font@tbu}{"5B}{largesymbols}{"02}
988   \DeclareMathDelimiter{]}\mathclose}{\mst@font@tbu}{"5D}{largesymbols}{"03}
989   \DeclareMathDelimiter{/}\mathord}{\mst@font@tbu}{"2F}{largesymbols}{"0E}
990 \fi
991 \DeclareMathSymbol{\mst@varfam@lparen}{\mathalpha}{\mst@font@tbu}{40}
```



```

992 \DeclareMathSymbol{\mst@varfam@rparen}{\mathalpha}{\mst@font@tbu}{41}
993 \DeclareMathSymbol{\mst@varfam@lbrack}{\mathalpha}{\mst@font@tbu}{5B}
994 \DeclareMathSymbol{\mst@varfam@rbrack}{\mathalpha}{\mst@font@tbu}{5D}
995 \DeclareMathSymbol{\mst@varfam@slash}{\mathalpha}{\mst@font@tbu}{2F}
996 \expandafter\mst@addtodo@nonletters\string(\mathopen\mst@varfam@lparen
997 \expandafter\mst@addtodo@nonletters\string)\mathclose\mst@varfam@rparen
998 \expandafter\mst@addtodo@nonletters\string[\mathopen\mst@varfam@lbrack
999 \expandafter\mst@addtodo@nonletters\string]\mathclose\mst@varfam@rbrack
1000 \mst@addtodo@easynonletters\/\mst@varfam@slash
1001 \fi

```

alldelims

```

<,>,\ 1002 \ifmst@alldelims\mst@infoline{alldelims: \string< \string>
\setminus 1003 \string\backslash\space\string\setminus\space\string|
\backslash 1004 \string\vert\space\string\mid\space\string{\space \string\}}
1005 \ifmst@nosmallldelims

```

Dec 18, 2012. We then want `\let\backslash\mst@varfam@backslash` to do nothing when the `\backslash` is used as a delimiter. So here the original definition from `latex.ltx` is copied, generally speaking when people use other math symbol fonts they do respect the encoding of the CM symbols and largesymbols, so this is 90% safe. But in truth I should extract from the meaning of `\backslash` the `delcode`.

```

1006 \DeclareMathDelimiter{\mst@varfam@backslash}
1007     {\mathalpha}{symbols}{6E}{largesymbols}{OF}
1008 \else
1009 \DeclareMathDelimiter{<}{\mathopen}{\mst@font@tbu}{3C}{largesymbols}{OA}
1010 \DeclareMathDelimiter{>}{\mathclose}{\mst@font@tbu}{3E}{largesymbols}{OB}

```

There is no backslash in the Symbol font hence `mtoperatorfont` here.

```

1011 \DeclareMathDelimiter{\backslash}
1012     {\mathord}{mtoperatorfont}{5C}{largesymbols}{OF}
1013 \DeclareMathDelimiter{\mst@varfam@backslash}
1014     {\mathalpha}{mtoperatorfont}{5C}{largesymbols}{OF}
1015 \fi
1016 \DeclareMathSymbol{<}{\mathrel}{\mst@font@tbu}{3C}
1017 \DeclareMathSymbol{>}{\mathrel}{\mst@font@tbu}{3E}
1018 \DeclareMathSymbol{\mst@varfam@less}{\mathalpha}{\mst@font@tbu}{3C}
1019 \DeclareMathSymbol{\mst@varfam@more}{\mathalpha}{\mst@font@tbu}{3E}
1020 \expandafter\mst@addtodo@nonletters\string<\mathrel\mst@varfam@less
1021 \expandafter\mst@addtodo@nonletters\string>\mathrel\mst@varfam@more
1022 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters
1023     \let\backslash\mst@varfam@backslash}
1024 \DeclareMathSymbol{\setminus}{\mathbin}{mtoperatorfont}{5C}
1025 \DeclareMathSymbol{\mst@varfam@setminus}{\mathalpha}{mtoperatorfont}{5C}

```

1.3v adds a `\protected` here for `\setminus`.

```

1026 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1027     \protected\def\setminus{\mathbin{\mst@varfam@setminus}}}

```

`\models` 1.15d: 13 oct 2012. Before modifying | we must preserve `\models`.

```

1028 \ifmst@XeOrLua

```

```

1029 \mst@Umathcharnumdef\mst@vert@bar=\mst@Umathcodenum`\\|relax
1030 \else
1031 \mathchardef\mst@vert@bar=\mathcode`\\|relax
1032 \fi
1033 \DeclareRobustCommand\models{\mathrel{\mst@vert@bar}\joinrel\Relbar}

```

|,\mid,\vert (2011) I did not do anything then to try to emulate `\Vert` with the vertical bar from the text font... and now (2012) `mathastext` is not as radical as it used to be anyhow, so it is too late. Or not (2019)? maybe I *should* do something here...

1.3v 2019/09/19: I discover this rather radical legacy `\def\vert{||}`, which is done here once in the preamble, but I leave it unmodified apart from prefixing it with `\protected`. I also add a `\protected` for the definition of `\mid` (which applies only under `\MTnonlettersobeymathxx` regime).

```

1034 \ifmst@nosmallldelims
1035 \DeclareMathSymbol{||}{\mathord}{\mst@font@tbu}{124}
1036 \else
1037 \DeclareMathDelimiter{||}{\mathord}{\mst@font@tbu}{124}{largesymbols}{"0C}
1038 \fi
1039 \protected\def\vert{||}
1040 \DeclareMathSymbol{\mst@varfam@vbar}{\mathalpha}{\mst@font@tbu}{124}
1041 \mst@addtodo@easynonletters\|\mst@varfam@vbar
1042 \let\mid\undefined % 1.3: to avoid problems with some packages
1043 \DeclareMathSymbol{\mid}{\mathrel}{\mst@font@tbu}{124}
1044 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1045 \protected\def\mid{\mathrel\mst@varfam@vbar}}

```

`\MTexplicitbraces-obeymathxx` Braces. With version 1.2, `\{` and `\}` will not be acceptable as delimiters anymore if the redefinitions below in `\mst@dobraces` are enacted. But they will obey math alphabets. Improvements in 1.2a, to preserve robustness.

`\MTexplicitbraces-donotobeymathxx` For 1.3 I make `\lbrace` and `\rbrace` undefined first, else problems may arise with some packages.

1.3e suppresses under option `nosmallldelims` the definitions of `\lbrace` and `\rbrace` as math symbols as this made `\left\lbrace` cause an error, it was a bug.

LaTeX2e defines `\{` and `\}` as robust commands for a long time (I don't know since when). The `mathastext` redefinition is done only if user has executed `\MTexplicitbracesobeymathxx`, and it is done only when entering math mode, but there could be some `\hbox` inside math, hence it has to be careful to be valid in text too.

1.3v maintains strict LaTeX2e robustness for `\{` and `\}`. This assumes no one fiddled with `\{` and `\}` proper (without space in the name).

```

1046 \ifmst@nosmallldelims
1047 \else
1048 \let\lbrace\undefined \let\rbrace\undefined
1049 \DeclareMathDelimiter{\lbrace}
1050 {\mathopen}{\mst@font@tbu}{123}{largesymbols}{"08}
1051 \DeclareMathDelimiter{\rbrace}
1052 {\mathclose}{\mst@font@tbu}{125}{largesymbols}{"09}
1053 \fi
1054 \DeclareMathSymbol{\mst@varfam@lbrace}{\mathalpha}{\mst@font@tbu}{123}
1055 \DeclareMathSymbol{\mst@varfam@rbrace}{\mathalpha}{\mst@font@tbu}{125}

```

```

1056 \DeclareRobustCommand*\mst@lbrace}
1057     {\ifmmode\mathopen\mst@varfam@lbrace\else\textbraceleft\fi}
1058 \DeclareRobustCommand*\mst@rbrace}
1059     {\ifmmode\mathclose\mst@varfam@rbrace\else\textbraceright\fi}
1060 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1061     \mst@dobraces{\expandafter\let\csname\string{ \expandafter\endcsname
1062                 \csname mst@lbrace \endcsname
1063                 \expandafter\let\csname\string} \expandafter\endcsname
1064                 \csname mst@rbrace \endcsname}}}
1065 \fi % end of \ifmst@alldelims
1066 \newcommand*\MTexplicitbracesobeymathxx}{\let\mst@dobraces\@firstofone}
1067 \newcommand*\MTexplicitbracesdonotobeymathxx}{\let\mst@dobraces\@gobble}
1068 \MTexplicitbracesdonotobeymathxx

```

specials 1.14b 2011/04/02: the redefinitions of #, \$, % and & were buggy (this showed up when 10 or more math families had been created).

1.15f 2012/10/23: the code, although working, was perhaps a bit insane and had definitions which could surprise other packages. For example, it did:

```
\renewcommand{\%}{\ifmmode\mt@mode@percent\else\char37\relax\fi}
```

But it seems this provokes a problem with microtype. Perhaps the problem was that the command was not declared robust? For the dollar \TeX itself does

```
\DeclareRobustCommand{\$}{\ifmmode\mathdollar\else\textdollar\fi}
```

So here I just modify \mathdollar . Then we have in `latex.ltx` the same definitions as in `plain.tex`: `\chardef\%=`\%`, `\chardef\&=`\&`, and `\chardef\#=`\#`. It turns out that we can just adjust the mathcodes of these characters and achieve exactly what is wanted for the corresponding one char control sequences. In math mode the control sequence will use the specified mathcode. So here it is *not* a redefinition of the control sequences, purely an adjustment of mathcodes.

1.2d 2013/01/01: previous versions imposed the variable family type. I hereby make it possible to de-activate this feature with the macro `\MTeasynonlettersdonotobeymathxx`. Besides, I have absolutely no idea why I had different looking code depending on the engine \TeX , \LaTeX or default. Removed.

1.3c 2013/12/14: I have absolutely no idea why I removed the \TeX and \LaTeX code at the time of 1.2d! the code for `tex/pdftex` engine could not accomodate more than 16 math families. Code for \TeX and \LaTeX again added. (and since TL2013 no more problems with `\luatexUmathcode`.)

```

1069 \ifmst@nospecials
1070 \else
1071     \mst@infoline{\string#\space\string\mathdollar\space
1072                 \string%\space\string\&\space}
1073     \ifmst@XeOrLua
1074     \mst@Umathcode`#=0 \symmoperatorfont "23 \relax
1075     \mst@Umathchardef\mathdollar=0 \symmoperatorfont "24 \relax
1076     \mst@Umathcode`\%=0 \symmoperatorfont "25 \relax
1077     \mst@Umathcode`\&=0 \symmoperatorfont "26 \relax
1078     \mst@do@easynonletters\expandafter{%
1079         \the\mst@do@easynonletters
1080         \mst@Umathcode`#=7 \symmoperatorfont "23 \relax
1081         \mst@Umathchardef\mathdollar=7 \symmoperatorfont "24 \relax

```

```

1082   \mst@Umathcode`\%=7 \symmoperatorfont "25 \relax
1083   \mst@Umathcode`\&=7 \symmoperatorfont "26 \relax
1084   }
1085   \else
1086   \count@=\symmoperatorfont
1087   \multiply\count@ by \@cclvi
1088   \advance\count@ by 35
1089   \mathcode`\#\count@
1090   \advance\count@ by \@ne
1091   \mathchardef\mathdollar\count@
1092   \advance\count@ by \@ne
1093   \mathcode`\%\count@
1094   \advance\count@ by \@ne
1095   \mathcode`\&\count@
1096   \count@=\symmoperatorfont
1097   \multiply\count@ by \@cclvi
1098   \advance\count@ by 28707 % = "7023
1099   \mathchardef\mst@varfam@mathhash\count@
1100   \advance\count@ by \@ne
1101   \mathchardef\mst@varfam@mathdollar\count@
1102   \advance\count@ by \@ne
1103   \mathchardef\mst@varfam@mathpercent\count@
1104   \advance\count@ by \@ne
1105   \mathchardef\mst@varfam@mathampersand\count@
1106   \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters
1107   \mathcode`\#=\mst@varfam@mathhash
1108   \let\mathdollar\mst@varfam@mathdollar
1109   \mathcode`\%=\mst@varfam@mathpercent
1110   \mathcode`\&=\mst@varfam@mathampersand}
1111   \fi
1112 \fi

```

symbolmisc We construct (with some effort) some long arrows from the Symbol glyphs, of almost the same lengths as the standard ones. By the way, I always found the `\iff` to be too wide, but I follow here the default. Also, although there is a `\longmapsto` in standard L^AT_EX, if I am not mistaken, there is no `\longto`. So I define one here. I could not construct in the same manner `\Longrightarrow` etc... as the = sign from Symbol does not combine easily with the logical arrows, well, I could have done some box manipulations, but well, life is finite.

`\prod` 1.13b: I correct the brutal re-definitions of `\prod` and `\sum` from the earlier versions of the package; most of the time the Symbol glyphs do appear to be too small in display mode. The new redefinitions do have some defects: $\displaystyle\prod_1^2$ changes the position of limits but not the glyph itself, and $\textstyle\prod_1^2$ change the limits but switches to the CM inline math glyph. So I tried `\renewcommand{\prod}{\mathchoice{\mst@prod}{\prodpsy}{\prodpsy}{\prodpsy}}` but this did not go well with subscripts and exponents.

October 2012: maybe I should re-examine what I did?

1.3c (2013/12/14) renames `\defaultprod` to `\MOriginalprod` and `\defaultsum` to `\MOriginalsum`.

1.3v hesitates about making robust here `\prod` and `\sum`. Finally I use `\protected` for them.

```

1113 \ifmst@symbolmisc\mst@infoline{symbolmisc: miscellaneous math symbols from Sym-
      bol font}
1114 \let\mst@prod\prod
1115 \let\MToriginalprod\prod
1116 \DeclareMathSymbol{\prodpsy}{\mathop}{mtpsymbol}{213}
1117 \protected\def\prod{\ifinner\prodpsy\else\mst@prod\fi}
1118 \let\mst@sum\sum
1119 \let\MToriginalsum\sum
1120 \DeclareMathSymbol{\sumpsy}{\mathop}{mtpsymbol}{229}
1121 \protected\def\sum{\ifinner\sumpsy\else\mst@sum\fi}

1122 \DeclareMathSymbol{\mst@implies}{\mathrel}{mtpsymbol}{222}
1123 \DeclareRobustCommand*\implies{\;\mst@implies\;}
1124 \DeclareMathSymbol{\mst@impliedby}{\mathrel}{mtpsymbol}{220}
1125 \DeclareRobustCommand*\impliedby{\;\mst@impliedby\;}
1126 \DeclareRobustCommand*\iff{\;\mst@impliedby\mathrel{\mkern-3mu}\mst@implies\;}
1127 \DeclareMathSymbol{\mst@iff}{\mathrel}{mtpsymbol}{219}
1128 \DeclareRobustCommand*\shortiff{\;\mst@iff\;}
1129 \DeclareMathSymbol{\mst@to}{\mathrel}{mtpsymbol}{174}
1130 \DeclareMathSymbol{\mst@trait}{\mathrel}{mtpsymbol}{190}
1131 \DeclareRobustCommand*\to{\mst@to}
1132 \DeclareRobustCommand*\longto{\mkern2mu\mst@trait\mathrel{\mkern-10mu}\mst@to}
1133 \DeclareRobustCommand*\mapsto{\mapstochar\mathrel{\mkern0.2mu}\mst@to}
1134 \DeclareRobustCommand*\longmapsto{\%
1135 \mapstochar\mathrel{\mkern2mu}\mst@trait\mathrel{\mkern-10mu}\mst@to}
1136 \DeclareMathSymbol{\aleph}{\mathord}{mtpsymbol}{192}
1137 \DeclareMathSymbol{\infty}{\mathord}{mtpsymbol}{165}
1138 \DeclareMathSymbol{\emptyset}{\mathord}{mtpsymbol}{198}
1139 \let\varnothing\emptyset
1140 \DeclareMathSymbol{\nabla}{\mathord}{mtpsymbol}{209}
1141 \DeclareMathSymbol{\surd}{\mathop}{mtpsymbol}{214}
1142 \let\angle\undefined
1143 \DeclareMathSymbol{\angle}{\mathord}{mtpsymbol}{208}
1144 \DeclareMathSymbol{\forall}{\mathord}{mtpsymbol}{34}
1145 \DeclareMathSymbol{\exists}{\mathord}{mtpsymbol}{36}
1146 \DeclareMathSymbol{\neg}{\mathord}{mtpsymbol}{216}
1147 \DeclareMathSymbol{\clubsuit}{\mathord}{mtpsymbol}{167}
1148 \DeclareMathSymbol{\diamondsuit}{\mathord}{mtpsymbol}{168}
1149 \DeclareMathSymbol{\heartsuit}{\mathord}{mtpsymbol}{169}
1150 \DeclareMathSymbol{\spadesuit}{\mathord}{mtpsymbol}{170}
1151 \DeclareMathSymbol{\smallint}{\mathop}{mtpsymbol}{242}
1152 \DeclareMathSymbol{\wedge}{\mathbin}{mtpsymbol}{217}
1153 \DeclareMathSymbol{\vee}{\mathbin}{mtpsymbol}{218}
1154 \DeclareMathSymbol{\cap}{\mathbin}{mtpsymbol}{199}
1155 \DeclareMathSymbol{\cup}{\mathbin}{mtpsymbol}{200}
1156 \DeclareMathSymbol{\bullet}{\mathbin}{mtpsymbol}{183}
1157 \DeclareMathSymbol{\div}{\mathbin}{mtpsymbol}{184}
1158 \DeclareMathSymbol{\otimes}{\mathbin}{mtpsymbol}{196}
1159 \DeclareMathSymbol{\oplus}{\mathbin}{mtpsymbol}{197}

```

```

1160 \DeclareMathSymbol{\pm}{\mathbin}{mtpsymbol}{177}
1161 \DeclareMathSymbol{\times}{\mathbin}{mtpsymbol}{180}
1162 \DeclareMathSymbol{\propto}{\mathrel}{mtpsymbol}{181}
1163 \DeclareMathSymbol{\mid}{\mathrel}{mtpsymbol}{124}
1164 \DeclareMathSymbol{\leq}{\mathrel}{mtpsymbol}{163}
1165 \DeclareMathSymbol{\geq}{\mathrel}{mtpsymbol}{179}
1166 \DeclareMathSymbol{\approx}{\mathrel}{mtpsymbol}{187}
1167 \DeclareMathSymbol{\supset}{\mathrel}{mtpsymbol}{201}
1168 \DeclareMathSymbol{\subset}{\mathrel}{mtpsymbol}{204}
1169 \DeclareMathSymbol{\supseteq}{\mathrel}{mtpsymbol}{202}
1170 \DeclareMathSymbol{\subseteq}{\mathrel}{mtpsymbol}{205}
1171 \DeclareMathSymbol{\in}{\mathrel}{mtpsymbol}{206}
1172 \DeclareMathSymbol{\sim}{\mathrel}{mtpsymbol}{126}
1173 \let\cong\undefined
1174 \DeclareMathSymbol{\cong}{\mathrel}{mtpsymbol}{64}
1175 \DeclareMathSymbol{\perp}{\mathrel}{mtpsymbol}{94}
1176 \DeclareMathSymbol{\equiv}{\mathrel}{mtpsymbol}{186}
1177 \let\notin\undefined
1178 \DeclareMathSymbol{\notin}{\mathrel}{mtpsymbol}{207}
1179 \DeclareMathDelimiter{\rangle}
1180   {\mathclose}{mtpsymbol}{241}{largesymbols}{"0B}
1181 \DeclareMathDelimiter{\langle}
1182   {\mathopen}{mtpsymbol}{225}{largesymbols}{"0A}
1183 \fi

```

symbolre I like the `\Re` and `\Im` from Symbol, so I overwrite the CM ones.

```

1184 \ifmst@symbolre\mst@infoline{symbolre: \string\Re\space and \string\Im\space from Sym-
bol font}
1185 \DeclareMathSymbol{\Re}{\mathord}{mtpsymbol}{"C2}
1186 \DeclareMathSymbol{\Im}{\mathord}{mtpsymbol}{"C1}
1187 \DeclareMathSymbol{\DotTriangle}{\mathord}{mtpsymbol}{92}
1188 \fi

```

Greek letters LGRgreek > selfGreek > eulergreek > symbolgreek

1.11 I correct some bugs on how eulergreek and symbolgreek interacted.

1.12b more bug fixes.

1.13

* Option LGRgreek.

* Also, a behavior has been changed: it regards the selfGreek case, the default shape is now the one for letters, not for operator-names and digits. This complies to the ISO standard.

* bugfix: version 1.12b did not define the `\omicron` in the case when no Greek-related option was passed to the package.

1.13d has new macros `\MTstandardgreek` and `\MTcustomgreek`. And in the subdued case `\MTstandardgreek` is done when switching to the normal or bold math versions (previously something like this was only done in case of LGRgreek option.)

```

1189 \let\mst@mathord\mathalpha
1190 \mst@goaheadtrue
1191 \ifmst@selfGreek
1192   \def\mst@font@tbu{mtselfGreekfont}

```

```

1193 \else
1194   \ifmst@eulergreek
1195     \def\mst@font@tbu{mteulervm}
1196   \else
1197     \ifmst@symbolgreek
1198       \def\mst@font@tbu{mtpsymbol}
1199       \let\mst@mathord\mathord
1200     \else
1201       \ifmst@LGRgreek
1202         \mst@goaheadfalse
1203       \else

```

The \omicron requires special treatment. By default we use the o from the (original) normal alphabet, if eulergreek or symbolgreek we adapt. There is also a special adjustment if the package `fourier` was loaded in its upright variant: we then take \omicron from the (original) `rm` alphabet.

```

1204         \mst@goaheadfalse
1205         \def\mst@omicron {\mst@alph@omicron{o}}
1206       \fi
1207     \fi
1208   \fi
1209 \fi
1210 \ifmst@goahead
1211   \DeclareMathSymbol{\mst@Alpha}{\mst@mathord}{\mst@font@tbu}{41}
1212   \DeclareMathSymbol{\mst@Beta}{\mst@mathord}{\mst@font@tbu}{42}
1213   \DeclareMathSymbol{\mst@Epsilon}{\mst@mathord}{\mst@font@tbu}{45}
1214   \DeclareMathSymbol{\mst@Zeta}{\mst@mathord}{\mst@font@tbu}{5A}
1215   \DeclareMathSymbol{\mst@Eta}{\mst@mathord}{\mst@font@tbu}{48}
1216   \DeclareMathSymbol{\mst@Iota}{\mst@mathord}{\mst@font@tbu}{49}
1217   \DeclareMathSymbol{\mst@Kappa}{\mst@mathord}{\mst@font@tbu}{4B}
1218   \DeclareMathSymbol{\mst@Mu}{\mst@mathord}{\mst@font@tbu}{4D}
1219   \DeclareMathSymbol{\mst@Nu}{\mst@mathord}{\mst@font@tbu}{4E}
1220   \DeclareMathSymbol{\mst@Omicron}{\mst@mathord}{\mst@font@tbu}{4F}
1221   \DeclareMathSymbol{\mst@Rho}{\mst@mathord}{\mst@font@tbu}{50}
1222   \DeclareMathSymbol{\mst@Tau}{\mst@mathord}{\mst@font@tbu}{54}
1223   \DeclareMathSymbol{\mst@Chi}{\mst@mathord}{\mst@font@tbu}{58}

```

When we in fact use `Symbol`, we have to correct ρ and χ . And \digamma is non-existent in fact (no `F` in `Symbol`, `F` codes a ϕ).

```

1224   \ifx\mst@mathord\mathord
      symbolgreek but neither eulergreek nor selfGreek
1225 %% attention le P de Symbol est un \Pi pas un \Rho
1226   \DeclareMathSymbol{\mst@Rho}{\mathord}{mtpsymbol}{52}
1227 %% attention le X de Symbol est un \Xi pas un \Chi
1228   \DeclareMathSymbol{\mst@Chi}{\mathord}{mtpsymbol}{43}
1229 %% attention le F de Symbol est un \Phi. Il n'y a pas de \Digamma
1230   \DeclareMathSymbol{\mst@Gamma}{\mathord}{mtpsymbol}{47}
1231   \DeclareMathSymbol{\mst@Delta}{\mathord}{mtpsymbol}{44}
1232   \DeclareMathSymbol{\mst@Theta}{\mathord}{mtpsymbol}{51}
1233   \DeclareMathSymbol{\mst@Lambda}{\mathord}{mtpsymbol}{4C}

```

```

1234 \DeclareMathSymbol{\mst@Xi}{\mathord}{mtpsymbol}{"58}
1235 \DeclareMathSymbol{\mst@Pi}{\mathord}{mtpsymbol}{"50}
1236 \DeclareMathSymbol{\mst@Sigma}{\mathord}{mtpsymbol}{"53}
1237 \DeclareMathSymbol{\mst@Upsilon}{\mathord}{mtpsymbol}{"A1}
1238 \DeclareMathSymbol{\mst@Phi}{\mathord}{mtpsymbol}{"46}
1239 \DeclareMathSymbol{\mst@Psi}{\mathord}{mtpsymbol}{"59}
1240 \DeclareMathSymbol{\mst@Omega}{\mathord}{mtpsymbol}{"57}
1241 \else % de \mst@mathord=\mathord

```

not symbolgreek but eulergreek or selfGreek. Note 2015/10/31 : apparemment à un moment dans le passé je considérais eulergreek et selfGreek comme pouvant être utilisés simultanément car j'avais ici "or both". Mais je laisse tomber tout effort réel de m'en préoccuper.

```

1242 \DeclareMathSymbol\mst@Digamma {\mathalpha}{\mst@font@tbu}{"46}
1243 \DeclareMathSymbol\mst@Gamma {\mathalpha}{\mst@font@tbu}{"00}
1244 \DeclareMathSymbol\mst@Delta {\mathalpha}{\mst@font@tbu}{"01}
1245 \DeclareMathSymbol\mst@Theta {\mathalpha}{\mst@font@tbu}{"02}
1246 \DeclareMathSymbol\mst@Lambda {\mathalpha}{\mst@font@tbu}{"03}
1247 \DeclareMathSymbol\mst@Xi {\mathalpha}{\mst@font@tbu}{"04}
1248 \DeclareMathSymbol\mst@Pi {\mathalpha}{\mst@font@tbu}{"05}
1249 \DeclareMathSymbol\mst@Sigma {\mathalpha}{\mst@font@tbu}{"06}
1250 \DeclareMathSymbol\mst@Upsilon {\mathalpha}{\mst@font@tbu}{"07}
1251 \DeclareMathSymbol\mst@Phi {\mathalpha}{\mst@font@tbu}{"08}
1252 \DeclareMathSymbol\mst@Psi {\mathalpha}{\mst@font@tbu}{"09}
1253 \DeclareMathSymbol\mst@Omega {\mathalpha}{\mst@font@tbu}{"0A}
1254 \fi % de \mst@mathord=\mathord
1255 \fi % fin de goahead

```

There are differences regarding Euler and Symbol with respect to the available var-letters. We include one or two things like the `wp` and the `partial`.

The lower case Greek letters in default L^AT_EX are of type `mathord`. If we use the Euler font it is perhaps better to have them be of type `mathalpha`

```

1256 \ifmst@goahead
1257 \ifmst@eulergreek
1258 \DeclareMathSymbol{\mst@alpha} {\mathalpha}{mteulervm}{"0B}
1259 \DeclareMathSymbol{\mst@beta} {\mathalpha}{mteulervm}{"0C}
1260 \DeclareMathSymbol{\mst@gamma} {\mathalpha}{mteulervm}{"0D}
1261 \DeclareMathSymbol{\mst@delta} {\mathalpha}{mteulervm}{"0E}
1262 \DeclareMathSymbol{\mst@epsilon} {\mathalpha}{mteulervm}{"0F}
1263 \DeclareMathSymbol{\mst@zeta} {\mathalpha}{mteulervm}{"10}
1264 \DeclareMathSymbol{\mst@eta} {\mathalpha}{mteulervm}{"11}
1265 \DeclareMathSymbol{\mst@theta} {\mathalpha}{mteulervm}{"12}
1266 \DeclareMathSymbol{\mst@iota} {\mathalpha}{mteulervm}{"13}
1267 \DeclareMathSymbol{\mst@kappa} {\mathalpha}{mteulervm}{"14}
1268 \DeclareMathSymbol{\mst@lambda} {\mathalpha}{mteulervm}{"15}
1269 \DeclareMathSymbol{\mst@mu} {\mathalpha}{mteulervm}{"16}
1270 \DeclareMathSymbol{\mst@nu} {\mathalpha}{mteulervm}{"17}
1271 \DeclareMathSymbol{\mst@xi} {\mathalpha}{mteulervm}{"18}
1272 \DeclareMathSymbol{\mst@omicron} {\mathalpha}{mteulervm}{"6F}
1273 \DeclareMathSymbol{\mst@pi} {\mathalpha}{mteulervm}{"19}
1274 \DeclareMathSymbol{\mst@rho} {\mathalpha}{mteulervm}{"1A}

```



```

1275 \DeclareMathSymbol{\mst@sigma} {\mathalpha}{mteulervm}{1B}
1276 \DeclareMathSymbol{\mst@tau} {\mathalpha}{mteulervm}{1C}
1277 \DeclareMathSymbol{\mst@upsilon}{\mathalpha}{mteulervm}{1D}
1278 \DeclareMathSymbol{\mst@phi} {\mathalpha}{mteulervm}{1E}
1279 \DeclareMathSymbol{\mst@chi} {\mathalpha}{mteulervm}{1F}
1280 \DeclareMathSymbol{\mst@psi} {\mathalpha}{mteulervm}{20}
1281 \DeclareMathSymbol{\mst@omega} {\mathalpha}{mteulervm}{21}
1282 %
1283 \DeclareMathSymbol{\mst@varepsilon}{\mathalpha}{mteulervm}{22}
1284 \DeclareMathSymbol{\mst@vartheta}{\mathalpha}{mteulervm}{23}
1285 \DeclareMathSymbol{\mst@varpi} {\mathalpha}{mteulervm}{24}
1286 \let\mst@varrho=\mst@rho
1287 \let\mst@varsigma=\mst@sigma
1288 \DeclareMathSymbol{\mst@varphi} {\mathalpha}{mteulervm}{27}
1289 %
1290 \DeclareMathSymbol{\mst@partial}{\mathalpha}{mteulervm}{40}
1291 \DeclareMathSymbol{\mst@wp}{\mathalpha}{mteulervm}{7D}
1292 \DeclareMathSymbol{\mst@ell}{\mathalpha}{mteulervm}{60}
1293 \else
1294 \ifmst@symbolgreek
1295 \DeclareMathSymbol{\mst@alpha}{\mathord}{mtpsymbol}{61}
1296 \DeclareMathSymbol{\mst@beta}{\mathord}{mtpsymbol}{62}
1297 \DeclareMathSymbol{\mst@gamma}{\mathord}{mtpsymbol}{67}
1298 \DeclareMathSymbol{\mst@delta}{\mathord}{mtpsymbol}{64}
1299 \DeclareMathSymbol{\mst@epsilon}{\mathord}{mtpsymbol}{65}
1300 \DeclareMathSymbol{\mst@zeta}{\mathord}{mtpsymbol}{7A}
1301 \DeclareMathSymbol{\mst@eta}{\mathord}{mtpsymbol}{68}
1302 \DeclareMathSymbol{\mst@theta}{\mathord}{mtpsymbol}{71}
1303 \DeclareMathSymbol{\mst@iota}{\mathord}{mtpsymbol}{69}
1304 \DeclareMathSymbol{\mst@kappa}{\mathord}{mtpsymbol}{6B}
1305 \DeclareMathSymbol{\mst@lambda}{\mathord}{mtpsymbol}{6C}
1306 \DeclareMathSymbol{\mst@mu}{\mathord}{mtpsymbol}{6D}
1307 \DeclareMathSymbol{\mst@nu}{\mathord}{mtpsymbol}{6E}
1308 \DeclareMathSymbol{\mst@xi}{\mathord}{mtpsymbol}{78}
1309 \DeclareMathSymbol{\mst@omicron}{\mathord}{mtpsymbol}{6F}
1310 \DeclareMathSymbol{\mst@pi}{\mathord}{mtpsymbol}{70}
1311 \DeclareMathSymbol{\mst@rho}{\mathord}{mtpsymbol}{72}
1312 \DeclareMathSymbol{\mst@sigma}{\mathord}{mtpsymbol}{73}
1313 \DeclareMathSymbol{\mst@tau}{\mathord}{mtpsymbol}{74}
1314 \DeclareMathSymbol{\mst@upsilon}{\mathord}{mtpsymbol}{75}
1315 \DeclareMathSymbol{\mst@phi}{\mathord}{mtpsymbol}{66}
1316 \DeclareMathSymbol{\mst@chi}{\mathord}{mtpsymbol}{63}
1317 \DeclareMathSymbol{\mst@psi}{\mathord}{mtpsymbol}{79}
1318 \DeclareMathSymbol{\mst@omega}{\mathord}{mtpsymbol}{77}
1319 \let\mst@varepsilon=\mst@epsilon
1320 \DeclareMathSymbol{\mst@vartheta}{\mathord}{mtpsymbol}{4A}
1321 \DeclareMathSymbol{\mst@varpi}{\mathord}{mtpsymbol}{76}
1322 \let\mst@varrho=\mst@rho
1323 \DeclareMathSymbol{\mst@varsigma}{\mathord}{mtpsymbol}{56}

```

```

1324 \DeclareMathSymbol{\mst@varphi}{\mathord}{mtpsymbol}{"6A}
1325 \DeclareMathSymbol{\mst@partial}{\mathord}{mtpsymbol}{"B6}
1326 \DeclareMathSymbol{\mst@wp}{\mathord}{mtpsymbol}{"C3}
1327 \fi
1328 \fi
1329 \fi

```

`\alphaup` etc... Completely refactored at 1.3x to define `\Alphaup`, `\Alphait`, `\alphaup`, `\alphait`, etc... and prepare templates `\Alpha`, ..., `\alpha`, ..., which when activating a math version will be submitted to an `\expanded`, whose behaviour will depend on version-specific conditionals.

```

1330 \ifmst@LGRgreek
1331 % cf http://milde.users.sourceforge.net/LGR/lgrxenc.def.html
1332 % et greek.ldf du package babel
1333 \DeclareMathSymbol{\Alphaup}{\mathalpha}{mtgreekup}{65}
1334 \DeclareMathSymbol{\Betaup}{\mathalpha}{mtgreekup}{66}
1335 \DeclareMathSymbol{\Epsilonup}{\mathalpha}{mtgreekup}{69}
1336 \DeclareMathSymbol{\Zetaup}{\mathalpha}{mtgreekup}{90}
1337 \DeclareMathSymbol{\Etaup}{\mathalpha}{mtgreekup}{72}
1338 \DeclareMathSymbol{\Iotaup}{\mathalpha}{mtgreekup}{73}
1339 \DeclareMathSymbol{\Kappaup}{\mathalpha}{mtgreekup}{75}
1340 \DeclareMathSymbol{\Muup}{\mathalpha}{mtgreekup}{77}
1341 \DeclareMathSymbol{\Nuup}{\mathalpha}{mtgreekup}{78}
1342 \DeclareMathSymbol{\Omicronup}{\mathalpha}{mtgreekup}{79}
1343 \DeclareMathSymbol{\Rhoupp}{\mathalpha}{mtgreekup}{82}
1344 \DeclareMathSymbol{\Tauup}{\mathalpha}{mtgreekup}{84}
1345 \DeclareMathSymbol{\Chiup}{\mathalpha}{mtgreekup}{81}
1346 %
1347 \DeclareMathSymbol{\Alphait}{\mathalpha}{mtgreekit}{65}
1348 \DeclareMathSymbol{\Betait}{\mathalpha}{mtgreekit}{66}
1349 \DeclareMathSymbol{\Epsilonit}{\mathalpha}{mtgreekit}{69}
1350 \DeclareMathSymbol{\Zetait}{\mathalpha}{mtgreekit}{90}
1351 \DeclareMathSymbol{\Etait}{\mathalpha}{mtgreekit}{72}
1352 \DeclareMathSymbol{\Iotait}{\mathalpha}{mtgreekit}{73}
1353 \DeclareMathSymbol{\Kappait}{\mathalpha}{mtgreekit}{75}
1354 \DeclareMathSymbol{\Muit}{\mathalpha}{mtgreekit}{77}
1355 \DeclareMathSymbol{\Nuit}{\mathalpha}{mtgreekit}{78}
1356 \DeclareMathSymbol{\Omicronit}{\mathalpha}{mtgreekit}{79}
1357 \DeclareMathSymbol{\Rhoit}{\mathalpha}{mtgreekit}{82}
1358 \DeclareMathSymbol{\Tauit}{\mathalpha}{mtgreekit}{84}
1359 \DeclareMathSymbol{\Chiit}{\mathalpha}{mtgreekit}{81}

```

1.3w and earlier had a bug regarding Digamma which was set up to use same font shape as for lowercase digamma.

```

1360 \DeclareMathSymbol{\Digammaup}{\mathalpha}{mtgreekup}{195}
1361 \DeclareMathSymbol{\Digammait}{\mathalpha}{mtgreekit}{195}
1362 %
1363 \DeclareMathSymbol{\Gammaup}{\mathalpha}{mtgreekup}{71}
1364 \DeclareMathSymbol{\Deltaup}{\mathalpha}{mtgreekup}{68}
1365 \DeclareMathSymbol{\Thetaup}{\mathalpha}{mtgreekup}{74}
1366 \DeclareMathSymbol{\Lambdaup}{\mathalpha}{mtgreekup}{76}

```

```

1367 \DeclareMathSymbol{\Xiup}{\mathalpha}{mtgreekup}{88}
1368 \DeclareMathSymbol{\Piup}{\mathalpha}{mtgreekup}{80}
1369 \DeclareMathSymbol{\Sigmaup}{\mathalpha}{mtgreekup}{83}
1370 \DeclareMathSymbol{\Upsilonup}{\mathalpha}{mtgreekup}{85}
1371 \DeclareMathSymbol{\Phiup}{\mathalpha}{mtgreekup}{70}
1372 \DeclareMathSymbol{\Psiup}{\mathalpha}{mtgreekup}{89}
1373 \DeclareMathSymbol{\Omegaup}{\mathalpha}{mtgreekup}{87}
1374 %
1375 \DeclareMathSymbol{\Gammait}{\mathalpha}{mtgreekit}{71}
1376 \DeclareMathSymbol{\Deltait}{\mathalpha}{mtgreekit}{68}
1377 \DeclareMathSymbol{\Thetait}{\mathalpha}{mtgreekit}{74}
1378 \DeclareMathSymbol{\Lambdait}{\mathalpha}{mtgreekit}{76}
1379 \DeclareMathSymbol{\Xiit}{\mathalpha}{mtgreekit}{88}
1380 \DeclareMathSymbol{\Piit}{\mathalpha}{mtgreekit}{80}
1381 \DeclareMathSymbol{\Sigmaid}{\mathalpha}{mtgreekit}{83}
1382 \DeclareMathSymbol{\Upsilonit}{\mathalpha}{mtgreekit}{85}
1383 \DeclareMathSymbol{\Phiit}{\mathalpha}{mtgreekit}{70}
1384 \DeclareMathSymbol{\Psiit}{\mathalpha}{mtgreekit}{89}
1385 \DeclareMathSymbol{\Omegait}{\mathalpha}{mtgreekit}{87}
1386 %
1387 \def\mst@Alpha{\ifmst@greek@upper@cup\Alphaup\else\Alphait\fi}%
1388 \def\mst@Beta{\ifmst@greek@upper@cup\Betaup\else\Betait\fi}%
1389 \def\mst@Epsilon{\ifmst@greek@upper@cup\Epsilonup\else\Epsilonit\fi}%
1390 \def\mst@Zeta{\ifmst@greek@upper@cup\Zetaup\else\Zetait\fi}%
1391 \def\mst@Eta{\ifmst@greek@upper@cup\Etaup\else\Etait\fi}%
1392 \def\mst@Iota{\ifmst@greek@upper@cup\Iotaup\else\Iotait\fi}%
1393 \def\mst@Kappa{\ifmst@greek@upper@cup\Kappaup\else\Kappait\fi}%
1394 \def\mst@Mu{\ifmst@greek@upper@cup\Muup\else\Muit\fi}%
1395 \def\mst@Nu{\ifmst@greek@upper@cup\Nuup\else\Nuit\fi}%
1396 \def\mst@Omicron{\ifmst@greek@upper@cup\Omicronup\else\Omicronit\fi}%
1397 \def\mst@Rho{\ifmst@greek@upper@cup\Rhoupp\else\Rhoit\fi}%
1398 \def\mst@Tau{\ifmst@greek@upper@cup\Tauup\else\Tauit\fi}%
1399 \def\mst@Chi{\ifmst@greek@upper@cup\Chiup\else\Chiit\fi}%
1400 %
1401 \def\mst@Digamma{\ifmst@greek@upper@cup\Digammaup\else\Digammait\fi}%
1402 %
1403 \def\mst@Gamma{\ifmst@greek@upper@cup\Gammaup\else\Gammait\fi}%
1404 \def\mst@Delta{\ifmst@greek@upper@cup\Deltaup\else\Deltait\fi}%
1405 \def\mst@Theta{\ifmst@greek@upper@cup\Thetaup\else\Thetait\fi}%
1406 \def\mst@Lambda{\ifmst@greek@upper@cup\Lambdaupp\else\Lambdait\fi}%
1407 \def\mst@Xi{\ifmst@greek@upper@cup\Xiup\else\Xiit\fi}%
1408 \def\mst@Pi{\ifmst@greek@upper@cup\Piup\else\Piit\fi}%
1409 \def\mst@Sigma{\ifmst@greek@upper@cup\Sigmaup\else\Sigmaid\fi}%
1410 \def\mst@Upsilon{\ifmst@greek@upper@cup\Upsilonup\else\Upsilonit\fi}%
1411 \def\mst@Phi{\ifmst@greek@upper@cup\Phiup\else\Phiit\fi}%
1412 \def\mst@Psi{\ifmst@greek@upper@cup\Psiup\else\Psiit\fi}%
1413 \def\mst@Omega{\ifmst@greek@upper@cup\Omegaup\else\Omegait\fi}%
1414 %
1415 \DeclareMathSymbol{\alphaup}{\mathalpha}{mtgreekup}{97}

```

```

1416 \DeclareMathSymbol{\betaup}{\mathalpha}{mtgreekup}{98}
1417 \DeclareMathSymbol{\gammaup}{\mathalpha}{mtgreekup}{103}
1418 \DeclareMathSymbol{\deltaup}{\mathalpha}{mtgreekup}{100}
1419 \DeclareMathSymbol{\epsilonup}{\mathalpha}{mtgreekup}{101}
1420 \DeclareMathSymbol{\zetaup}{\mathalpha}{mtgreekup}{122}
1421 \DeclareMathSymbol{\etaup}{\mathalpha}{mtgreekup}{104}
1422 \DeclareMathSymbol{\thetaup}{\mathalpha}{mtgreekup}{106}
1423 \DeclareMathSymbol{\iotaup}{\mathalpha}{mtgreekup}{105}
1424 \DeclareMathSymbol{\kappaup}{\mathalpha}{mtgreekup}{107}
1425 \DeclareMathSymbol{\lambdaup}{\mathalpha}{mtgreekup}{108}
1426 \DeclareMathSymbol{\muup}{\mathalpha}{mtgreekup}{109}
1427 \DeclareMathSymbol{\nuup}{\mathalpha}{mtgreekup}{110}
1428 \DeclareMathSymbol{\xiup}{\mathalpha}{mtgreekup}{120}
1429 \DeclareMathSymbol{\omicronup}{\mathalpha}{mtgreekup}{111}
1430 \DeclareMathSymbol{\piup}{\mathalpha}{mtgreekup}{112}
1431 \DeclareMathSymbol{\rhothoup}{\mathalpha}{mtgreekup}{114}
1432 \DeclareMathSymbol{\sigmaup}{\mathalpha}{mtgreekup}{115}
1433 \DeclareMathSymbol{\tauup}{\mathalpha}{mtgreekup}{116}
1434 \DeclareMathSymbol{\upsilonup}{\mathalpha}{mtgreekup}{117}
1435 \DeclareMathSymbol{\phiup}{\mathalpha}{mtgreekup}{102}
1436 \DeclareMathSymbol{\chiup}{\mathalpha}{mtgreekup}{113}
1437 \DeclareMathSymbol{\psiup}{\mathalpha}{mtgreekup}{121}
1438 \DeclareMathSymbol{\omegaup}{\mathalpha}{mtgreekup}{119}
1439 %
1440 \DeclareMathSymbol{\digammaup}{\mathalpha}{mtgreekup}{147}
1441 % only varsigma defined (I should check this again)
1442 \DeclareMathSymbol{\varsigmaup}{\mathalpha}{mtgreekup}{99}
1443 %
1444 \DeclareMathSymbol{\alphait}{\mathalpha}{mtgreekit}{97}
1445 \DeclareMathSymbol{\betait}{\mathalpha}{mtgreekit}{98}
1446 \DeclareMathSymbol{\gammait}{\mathalpha}{mtgreekit}{103}
1447 \DeclareMathSymbol{\deltait}{\mathalpha}{mtgreekit}{100}
1448 \DeclareMathSymbol{\epsilonit}{\mathalpha}{mtgreekit}{101}
1449 \DeclareMathSymbol{\zetaait}{\mathalpha}{mtgreekit}{122}
1450 \DeclareMathSymbol{\etaait}{\mathalpha}{mtgreekit}{104}
1451 \DeclareMathSymbol{\thetaait}{\mathalpha}{mtgreekit}{106}
1452 \DeclareMathSymbol{\iotaait}{\mathalpha}{mtgreekit}{105}
1453 \DeclareMathSymbol{\kappaait}{\mathalpha}{mtgreekit}{107}
1454 \DeclareMathSymbol{\lambdaait}{\mathalpha}{mtgreekit}{108}
1455 \DeclareMathSymbol{\muait}{\mathalpha}{mtgreekit}{109}
1456 \DeclareMathSymbol{\nuait}{\mathalpha}{mtgreekit}{110}
1457 \DeclareMathSymbol{\xiit}{\mathalpha}{mtgreekit}{120}
1458 \DeclareMathSymbol{\omicronit}{\mathalpha}{mtgreekit}{111}
1459 \DeclareMathSymbol{\piit}{\mathalpha}{mtgreekit}{112}
1460 \DeclareMathSymbol{\rhoit}{\mathalpha}{mtgreekit}{114}
1461 \DeclareMathSymbol{\sigmait}{\mathalpha}{mtgreekit}{115}
1462 \DeclareMathSymbol{\tauait}{\mathalpha}{mtgreekit}{116}
1463 \DeclareMathSymbol{\upsilonit}{\mathalpha}{mtgreekit}{117}
1464 \DeclareMathSymbol{\phiit}{\mathalpha}{mtgreekit}{102}

```

```

1465 \DeclareMathSymbol{\chiit}{\mathalpha}{mtgreekit}{113}
1466 \DeclareMathSymbol{\psiit}{\mathalpha}{mtgreekit}{121}
1467 \DeclareMathSymbol{\omegait}{\mathalpha}{mtgreekit}{119}
1468 %
1469 \DeclareMathSymbol{\digammait}{\mathalpha}{mtgreekit}{147}
1470 \DeclareMathSymbol{\varsigmait}{\mathalpha}{mtgreekit}{99}
1471 %
1472 \def\mst@alpha{\ifmst@greek@lower@up\alphaup\else\alphait\fi}%
1473 \def\mst@beta{\ifmst@greek@lower@up\betaup\else\betait\fi}%
1474 \def\mst@gamma{\ifmst@greek@lower@up\gammaup\else\gammait\fi}%
1475 \def\mst@delta{\ifmst@greek@lower@up\deltaup\else\deltait\fi}%
1476 \def\mst@epsilon{\ifmst@greek@lower@up\epsilonup\else\epsilonit\fi}%
1477 \def\mst@zeta{\ifmst@greek@lower@up\zetaup\else\zetait\fi}%
1478 \def\mst@eta{\ifmst@greek@lower@up\etaup\else\etait\fi}%
1479 \def\mst@theta{\ifmst@greek@lower@up\thetaup\else\thetait\fi}%
1480 \def\mst@iota{\ifmst@greek@lower@up\iotaup\else\iotait\fi}%
1481 \def\mst@kappa{\ifmst@greek@lower@up\kappaup\else\kappait\fi}%
1482 \def\mst@lambda{\ifmst@greek@lower@up\lambdaup\else\lambdait\fi}%
1483 \def\mst@mu{\ifmst@greek@lower@up\muup\else\mu\fi}%
1484 \def\mst@nu{\ifmst@greek@lower@up\nuup\else\nuit\fi}%
1485 \def\mst@xi{\ifmst@greek@lower@up\xiup\else\xiit\fi}%
1486 \def\mst@omicron{\ifmst@greek@lower@up\omicronup\else\omicronit\fi}%
1487 \def\mst@pi{\ifmst@greek@lower@up\piup\else\piit\fi}%
1488 \def\mst@rho{\ifmst@greek@lower@up\rhou\else\rhoit\fi}%
1489 \def\mst@sigma{\ifmst@greek@lower@up\sigmaup\else\sigmait\fi}%
1490 \def\mst@tau{\ifmst@greek@lower@up\tauup\else\tauit\fi}%
1491 \def\mst@upsilon{\ifmst@greek@lower@up\upsilonup\else\upsilonit\fi}%
1492 \def\mst@phi{\ifmst@greek@lower@up\phiup\else\phiit\fi}%
1493 \def\mst@chi{\ifmst@greek@lower@up\chiup\else\chiit\fi}%
1494 \def\mst@psi{\ifmst@greek@lower@up\psiup\else\psiit\fi}%
1495 \def\mst@omega{\ifmst@greek@lower@up\omegaup\else\omegait\fi}%
1496 %
1497 \def\mst@digamma{\ifmst@greek@lower@up\digammaup\else\digammait\fi}%
1498 \def\mst@varsigma{\ifmst@greek@lower@up\varsigmaup\else\varsigmait\fi}%
1499 \fi

```

`\MTstandardgreek` 1.3d 2014/05/23 defines the commands `\MTstandardgreek` and `\MTcustomgreek` for package user. I leave `\MTrecordstandardgreek` undocumented as I don't want to encourage people to load math packages after **mathastext**.

1.3h 2015/10/31: corrected `\MTcustomgreek` as it caused `\ell` to become undefined under option `symbolgreek` and, much more catastrophic, caused `\alpha`, etc.. to become undefined under option `selfGreek` !

```

1500 \newcommand*{\MTstandardgreek}{}
1501 \newcommand*{\MTcustomgreek}{}
1502 \newcommand*{\MTrecordstandardgreek}{}
1503 \ifmst@customgreek
1504 \renewcommand*{\MTrecordstandardgreek}{%
1505     \let\mst@origAlpha\Alpha
1506     \let\mst@origBeta\Beta

```

1507 \let\mst@origGamma\Gamma
1508 \let\mst@origDelta\Delta
1509 \let\mst@origEpsilon\Epsilon
1510 \let\mst@origZeta\Zeta
1511 \let\mst@origEta\Eta
1512 \let\mst@origTheta\Theta
1513 \let\mst@origIota\Iota
1514 \let\mst@origKappa\Kappa
1515 \let\mst@origLambda\Lambda
1516 \let\mst@origMu\Mu
1517 \let\mst@origNu\Nu
1518 \let\mst@origXi\Xi
1519 \let\mst@origOmicron\Omicron
1520 \let\mst@origPi\Pi
1521 \let\mst@origRho\Rho
1522 \let\mst@origSigma\Sigma
1523 \let\mst@origTau\Tau
1524 \let\mst@origUpsilon\Upsilon
1525 \let\mst@origPhi\Phi
1526 \let\mst@origChi\Chi
1527 \let\mst@origPsi\Psi
1528 \let\mst@origOmega\Omega
1529 %
1530 \let\mst@origalpha\alpha
1531 \let\mst@origbeta\beta
1532 \let\mst@origgamma\gamma
1533 \let\mst@origdelta\delta
1534 \let\mst@origepsilon\epsilon
1535 \let\mst@origvarepsilon\varepsilon
1536 \let\mst@origzeta\zeta
1537 \let\mst@origeta\eta
1538 \let\mst@origtheta\theta
1539 \let\mst@origvartheta\vartheta
1540 \let\mst@origiota\iota
1541 \let\mst@origkappa\kappa
1542 \let\mst@origlambda\lambda
1543 \let\mst@origmu\mu
1544 \let\mst@orignu\nu
1545 \let\mst@origxi\xi
1546 \let\mst@origomicron\omicron
1547 \let\mst@origpi\pi
1548 \let\mst@origvarpi\varpi
1549 \let\mst@origrho\rho
1550 \let\mst@origvarrho\varrho
1551 \let\mst@origsigma\sigma
1552 \let\mst@origvarsigma\varsigma
1553 \let\mst@origtau\tau
1554 \let\mst@origupsilon\upsilon
1555 \let\mst@origphi\phi

```

1556 \let\mst@origvarphi\varphi
1557 \let\mst@origchi\chi
1558 \let\mst@origpsi\psi
1559 \let\mst@origomega\omega
1560 \let\mst@origDigamma\Digamma
1561 \let\mst@origdigamma\digamma
1562 %
1563 \let\mst@origpartial\partial
1564 \let\mst@origwp\wp
1565 \let\mst@origell\ell }% \MTrecordstandardgreek
1566 \MTrecordstandardgreek
1567 \renewcommand*{\MTstandardgreek}{%
1568 \let\Alpha\mst@origAlpha
1569 \let\Beta\mst@origBeta
1570 \let\Gamma\mst@origGamma
1571 \let\Delta\mst@origDelta
1572 \let\Epsilon\mst@origEpsilon
1573 \let\Zeta\mst@origZeta
1574 \let\Eta\mst@origEta
1575 \let\Theta\mst@origTheta
1576 \let\Iota\mst@origIota
1577 \let\Kappa\mst@origKappa
1578 \let\Lambda\mst@origLambda
1579 \let\Mu\mst@origMu
1580 \let\Nu\mst@origNu
1581 \let\Xi\mst@origXi
1582 \let\Omicron\mst@origOmicron
1583 \let\Pi\mst@origPi
1584 \let\Rho\mst@origRho
1585 \let\Sigma\mst@origSigma
1586 \let\Tau\mst@origTau
1587 \let\Upsilon\mst@origUpsilon
1588 \let\Phi\mst@origPhi
1589 \let\Chi\mst@origChi
1590 \let\Psi\mst@origPsi
1591 \let\Omega\mst@origOmega
1592 %
1593 \let\alpha\mst@origalpha
1594 \let\beta\mst@origbeta
1595 \let\gamma\mst@origgamma
1596 \let\delta\mst@origdelta
1597 \let\epsilon\mst@origepsilon
1598 \let\varepsilon\mst@origvarepsilon
1599 \let\zeta\mst@origzeta
1600 \let\eta\mst@origeta
1601 \let\theta\mst@origtheta
1602 \let\vartheta\mst@origvartheta
1603 \let\iota\mst@origiota
1604 \let\kappa\mst@origkappa

```

```

1605 \let\lambda\mst@origlambda
1606 \let\mu\mst@origmu
1607 \let\nu\mst@orignu
1608 \let\xi\mst@origxi
1609 \let\omicron\mst@origomicron
1610 \let\pi\mst@origpi
1611 \let\varpi\mst@origvarpi
1612 \let\rho\mst@origrho
1613 \let\varrho\mst@origvarrho
1614 \let\sigma\mst@origsigma
1615 \let\varsigma\mst@origvarsigma
1616 \let\tau\mst@origtau
1617 \let\upsilon\mst@origupsilon
1618 \let\phi\mst@origphi
1619 \let\varphi\mst@origvarphi
1620 \let\chi\mst@origchi
1621 \let\psi\mst@origpsi
1622 \let\omega\mst@origomega
1623 \let\Digamma\mst@origDigamma
1624 \let\digamma\mst@origdigamma
1625 %
1626 \let\partial\mst@origpartial
1627 \let\wp\mst@origwp
1628 \let\ell\mst@origell
1629 }% \MTstandardgreek
1630 \ifmst@greekplus

```

1.3za implementation of LGRgreek+ option. It is not exactly clear what we should do for `\mathnormal` and `\mathnormalbold`.

This definition allows usage of `\alpha` for example in numerical context. To be completely clean perhaps we should get rid of final `\fi`, but old-fashioned L^AT_EX does not have built-in conveniences, were it not for the nested if's simple `\expandafter` would do, but here we would need three in four places. Or simply wrap the whole in `\expanded`. Anyway, not really important.

```

1631 \def\mst@define@lowergreekletter#1#2{%
1632   \protected\def#1{\ifcase\mst@mathalph
1633     \ifmst@greek@lower@up\mathgreekup{#2}\else\mathgreekit{#2}\fi
1634     \or % rm
1635       \mathgreekup{#2}%
1636     \or % bf
1637       \mathgreekupbold{#2}%
1638     \or % it
1639       \mathgreekit{#2}%
1640     \or % normalbold
1641       \ifmst@greek@lower@up\mathgreekupbold{#2}\else\mathgreekitbold{#2}\fi
1642     \else #2\fi}%
1643 }
1644 \def\mst@define@uppergreekletter#1#2{%
1645   \protected\def#1{\ifcase\mst@mathalph
1646     \ifmst@greek@upper@up\mathgreekup{#2}\else\mathgreekit{#2}\fi
1647     \or % rm

```



```

1648     \mathgreekup{#2}%
1649     \or % bf
1650     \mathgreekupbold{#2}%
1651     \or % it
1652     \mathgreekit{#2}%
1653     \or % mathnormalbold
1654     \ifmst@greek@upper@up\mathgreekupbold{#2}\else\mathgreekitbold{#2}\fi
1655     \else #2\fi}%
1656   }
1657 \renewcommand*{\MTcustomgreek}{%
1658   \mst@define@uppergreekletter\Alpha\mst@Alpha
1659   \mst@define@uppergreekletter\Beta\mst@Beta
1660   \mst@define@uppergreekletter\Epsilon\mst@Epsilon
1661   \mst@define@uppergreekletter\Zeta\mst@Zeta
1662   \mst@define@uppergreekletter\Eta\mst@Eta
1663   \mst@define@uppergreekletter\Iota\mst@Iota
1664   \mst@define@uppergreekletter\Kappa\mst@Kappa
1665   \mst@define@uppergreekletter\Mu\mst@Mu
1666   \mst@define@uppergreekletter\Nu\mst@Nu
1667   \mst@define@uppergreekletter\Omicron\mst@Omicron
1668   \mst@define@uppergreekletter\Rho\mst@Rho
1669   \mst@define@uppergreekletter\Tau\mst@Tau
1670   \mst@define@uppergreekletter\Chi\mst@Chi
1671   \mst@define@uppergreekletter\Digamma\mst@Digamma
1672   \mst@define@uppergreekletter\Gamma\mst@Gamma
1673   \mst@define@uppergreekletter\Delta\mst@Delta
1674   \mst@define@uppergreekletter\Theta\mst@Theta
1675   \mst@define@uppergreekletter\Lambda\mst@Lambda
1676   \mst@define@uppergreekletter\Xi\mst@Xi
1677   \mst@define@uppergreekletter\Pi\mst@Pi
1678   \mst@define@uppergreekletter\Sigma\mst@Sigma
1679   \mst@define@uppergreekletter\Upsilon\mst@Upsilon
1680   \mst@define@uppergreekletter\Phi\mst@Phi
1681   \mst@define@uppergreekletter\Psi\mst@Psi
1682   \mst@define@uppergreekletter\Omega\mst@Omega
1683   \mst@define@lowergreekletter\alpha\mst@alpha
1684   \mst@define@lowergreekletter\beta\mst@beta
1685   \mst@define@lowergreekletter\gamma\mst@gamma
1686   \mst@define@lowergreekletter\delta\mst@delta
1687   \mst@define@lowergreekletter\epsilon\mst@epsilon
1688   \mst@define@lowergreekletter\zeta\mst@zeta
1689   \mst@define@lowergreekletter\eta\mst@eta
1690   \mst@define@lowergreekletter\theta\mst@theta
1691   \mst@define@lowergreekletter\iota\mst@iota
1692   \mst@define@lowergreekletter\kappa\mst@kappa
1693   \mst@define@lowergreekletter\lambda\mst@lambda
1694   \mst@define@lowergreekletter\mu\mst@mu
1695   \mst@define@lowergreekletter\nu\mst@nu
1696   \mst@define@lowergreekletter\xi\mst@xi

```

```

1697 \mst@define@lowergreekletter\omicron\mst@omicron
1698 \mst@define@lowergreekletter\pi\mst@pi
1699 \mst@define@lowergreekletter\rho\mst@rho
1700 \mst@define@lowergreekletter\sigma\mst@sigma
1701 \mst@define@lowergreekletter\tau\mst@tau
1702 \mst@define@lowergreekletter\upsilon\mst@upsilon
1703 \mst@define@lowergreekletter\phi\mst@phi
1704 \mst@define@lowergreekletter\chi\mst@chi
1705 \mst@define@lowergreekletter\psi\mst@psi
1706 \mst@define@lowergreekletter\omega\mst@omega
1707 \mst@define@lowergreekletter\varsigma\mst@varsigma
1708 \mst@define@lowergreekletter\digamma\mst@digamma
1709 }% end of True branch of \ifmst@greekplus
1710 \else

```

Under selfGreek or other Greek option but not LGRgreek, these Greek letter control sequences are already `\mathchar's`, but under LGRgreek they need (well not really, but I feel it is cleaner) expansion which will react to the Boolean saying if using 'upright' or 'italic'. This Boolean setting is recorded when declaring a math version and reenacted when `\MTversion` is encountered in the document body. We must be careful not to contaminate things in the principal mode from math version declarations but I think my (now quite old) code is globally designed to achieve this protection see how `\MTDeclareVersion` is done. The `\MTcustomgreek` will always be executed in preamble at least once, except under `subdued` option.

The `\expanded's` act on unexpanding tokens if not used under LGRgreek regimen.

```

1711 \renewcommand*{\MTcustomgreek}{%
1712 \expanded{%
1713 \let\noexpand\Alpha\mst@Alpha
1714 \let\noexpand\Beta\mst@Beta
1715 \let\noexpand\Epsilon\mst@Epsilon
1716 \let\noexpand\Zeta\mst@Zeta
1717 \let\noexpand\Eta\mst@Eta
1718 \let\noexpand\Iota\mst@Iota
1719 \let\noexpand\Kappa\mst@Kappa
1720 \let\noexpand\Mu\mst@Mu
1721 \let\noexpand\Nu\mst@Nu
1722 \let\noexpand\Omicron\mst@Omicron
1723 \let\noexpand\Rho\mst@Rho
1724 \let\noexpand\Tau\mst@Tau
1725 \let\noexpand\Chi\mst@Chi
1726 }% end of first big \expanded
1727 % 1.3h: \mst@Digamma not defined if symbolgreek option
1728 \ifmst@symbolgreek\else
1729 \expanded{\let\noexpand\Digamma\mst@Digamma}%
1730 \fi
1731 \expanded{%
1732 \let\noexpand\Gamma\mst@Gamma
1733 \let\noexpand\Delta\mst@Delta
1734 \let\noexpand\Theta\mst@Theta
1735 \let\noexpand\Lambda\mst@Lambda
1736 \let\noexpand\Xi\mst@Xi

```

```

1737 \let\noexpand\Pi\mst@Pi
1738 \let\noexpand\Sigma\mst@Sigma
1739 \let\noexpand\Upsilon\mst@Upsilon
1740 \let\noexpand\Phi\mst@Phi
1741 \let\noexpand\Psi\mst@Psi
1742 \let\noexpand\Omega\mst@Omega
1743 }% end of second big \expanded
    1.3h 2015/10/31 adds this conditional to correct the bad bug in 1.3d 2014/05/23 which caused
    \alpha etc... to become undefined under option selfGreek.
1744 \ifmst@selfGreek\else
1745 \expanded{%
1746 \let\noexpand\alpha\mst@alpha
1747 \let\noexpand\beta\mst@beta
1748 \let\noexpand\gamma\mst@gamma
1749 \let\noexpand\delta\mst@delta
1750 \let\noexpand\epsilon\mst@epsilon
1751 \let\noexpand\zeta\mst@zeta
1752 \let\noexpand\eta\mst@eta
1753 \let\noexpand\theta\mst@theta
1754 \let\noexpand\iota\mst@iota
1755 \let\noexpand\kappa\mst@kappa
1756 \let\noexpand\lambda\mst@lambda
1757 \let\noexpand\mu\mst@mu
1758 \let\noexpand\nu\mst@nu
1759 \let\noexpand\xi\mst@xi
1760 \let\noexpand\omicron\mst@omicron
1761 \let\noexpand\pi\mst@pi
1762 \let\noexpand\rho\mst@rho
1763 \let\noexpand\sigma\mst@sigma
1764 \let\noexpand\tau\mst@tau
1765 \let\noexpand\upsilon\mst@upsilon
1766 \let\noexpand\phi\mst@phi
1767 \let\noexpand\chi\mst@chi
1768 \let\noexpand\psi\mst@psi
1769 \let\noexpand\omega\mst@omega
1770 \let\noexpand\varsigma\mst@varsigma
1771 }% end of third big \expanded
1772 % 1.3h: digamma only defined with option LGRgreek:
1773 \ifmst@LGRgreek
1774 \expanded{\let\noexpand\digamma\mst@digamma}%
1775 \fi
1776 % conditional added 1.3h 2015/10/31
1777 \ifmst@LGRgreek\else
1778 \let\varepsilon\mst@varepsilon
1779 \let\vartheta\mst@vartheta
1780 \let\varpi\mst@varpi
1781 \let\varrho\mst@varrho
1782 \let\varphi\mst@varphi
1783 %

```

```

1784     \let\partial\mst@partial
1785     \let\wp\mst@wp
1786 % 1.3h: no \mst@ell if symbolgreek (bugfix 1.3h 2015/10/31)
1787     \ifmst@symbolgreek\else\let\ell\mst@ell\fi
1788     \fi
1789 \fi
1790 }% \MTcustomgreek
1791 \fi% end of else branch of \ifmst@greekplus
1792 \fi% end of \ifmst@customgreek
1793 \let\Mathastextstandardgreek\MTstandardgreek
1794 \let\Mathastextcustomgreek\MTcustomgreek
1795 \ifmst@subdued\else\MTcustomgreek\fi

```

\inodot In 1.0, I had them of type mathord, here I choose mathalpha. If I used \i and \j from the text font the problem would be with the fontsize, if in scriptstyle. The amsmath \text would do the trick.

1.14b 2011/04/02: again this bug in the EU1/EU2 encoding part, as in the code redefining \$ etc in math mode (see above). Fixed.

1.31 2016/01/29: anticipating TL2016 fontspec's switch to TU.

1.3t 2018/08/22 removes the definitions done of \i and \j since 1.12 (as robust commands usable both in text and math mode).

1.3u lets the \imath and \jmath react to the font encoding at each math version.

1.3v lets the redefined \imath and \jmath be \protected.

```

1796 \def\mst@subduedinodot{%
1797     \let\inodot\mst@original@imath
1798     \let\jnodot\mst@original@jmath
1799 }%
1800 \def\mst@nonsubduedinodot{%
1801     \expandafter\let\expandafter\inodot
1802         \csname mst@inodot@mv\math@version\endcsname
1803     \expandafter\let\expandafter\jnodot
1804         \csname mst@jnodot@mv\math@version\endcsname
1805 }%
1806 \def\mst@dothe@inodotstuff#1#2#3{%
1807     \edef\mst@tmp@enc{#3}%
1808     \if1\mst@OneifUniEnc
1809         % Unicode engine and font
1810         \mst@Umathchardef#1="7 \symmtletterfont "0131 \relax
1811         \mst@Umathchardef#2="7 \symmtletterfont "0237 \relax
1812     \else
1813         \DeclareMathSymbol{#1}{\mathalpha}{mtletterfont}
1814             {\csname\mst@tmp@enc\string\i\endcsname}
1815         \DeclareMathSymbol{#2}{\mathalpha}{mtletterfont}
1816             {\csname\mst@tmp@enc\string\j\endcsname}
1817     \fi}% \mst@dothe@inodotstuff
1818 \ifmst@defaultimath\else\mst@infoline{\string\imath\space and \string\jmath\space}
1819     \AtEndOfPackage{\AtBeginDocument{%
1820         \protected\def\imath{\inodot}%
1821         \protected\def\jmath{\jnodot}%

```

```

1822   }}%
1823 \fi

```

math accents *Obsolete comments relative to the 2011 code:*

I don't know how to get from the encoding to the slot positions of the accents (apart from going to look at all possible encodings definition files and putting this info here). In standard L^AT_EX, the math accents are taken from the 'operators' font. So we do the same here. Of course there is the problem that the user can define math versions with different encodings. Here I take T1 if it was the default at the time of loading the package, else OT1. 1.12b: I add LY1 which is quasi like OT1.

At 1.3u 2019/08/20 I decide to remove the hard-coded slot positions for OT1, T1 and LY1, and replace them with some hack which assumes LaTeX2e way of handling text accents got executed by the encoding definition file. If not, some breakage on package loading could occur, but this whole thing is conditional on the `mathaccents` option anyway, which per default is not executed.

The `\vec` accent is not considered here because it has no suitable available glyph in a standard 8bits text font encodings.

Also at 1.3u the math accents adapt to the font encoding at each math version.

1.3v adapts to L^AT_EX 2019-10-01 which now comes with robust math accent macros. The «original»-named macros are without the robustifying space (NOT true anymore, see 1.3w next), as they only serve as meaning holders.

On the other hand the macros indexed by math version names are (in the pdf_latex branch) always defined via `\DeclareMathAccent` hence they will be robust with 2019-10-01 or later and we must use the `\mst@robustifyingspace` with them to access their real meaning (this thus differs from the situation with `\hbar`).

1.3w The above was a bit optimistic as `amsmath` for example modifies L^AT_EX internals and handles math accents differently.

We thus needed to double our `\let`'s as, if `amsmath` is loaded, the cs with space will exist but not be paired in expected way with the original cs. This breaks things by the way if some math accent is written to an external file under a certain context and executed in another context. The new context will be probably ignored if `amsmath` is loaded, as the external file will have an already expanded-once meaning.

Some macros with space in name might thus be created as `\relax`. Should I rather create `\protected` macros for the math accents with Unicode engines? Anyway, the construct does give good result with the few OpenType text fonts I tested.

```

1824 \let\mst@subduedmathaccents\@empty
1825 \let\mst@nonsubduedmathaccents\@empty
1826 \ifmst@mathaccents
1827 \def\mst@subduedmathaccents{%
1828   \@tfor\@tempa:={grave}{acute}{check}{breve}{bar}%
1829                 {dot}{ddot}{mathring}{hat}{tilde}%
1830   \do
1831   {\expandafter\let\csname\@tempa\expandafter\endcsname
1832     \csname mst@original@\@tempa\endcsname
1833   \expandafter\let\csname\@tempa\space\expandafter\endcsname
1834     \csname mst@original@\@tempa\space\endcsname
1835   }%
1836 }%

```

```

1837 \def\mst@nonsubduedmathaccents{%
1838   \@tfor\@tempa:={grave}{acute}{check}{breve}{bar}%
1839                 {dot}{ddot}{mathring}{hat}{tilde}%
1840   \do
1841   {\expandafter\let\csname\@tempa\expandafter\endcsname
1842                 \csname mst@\@tempa @mv\math@version\endcsname
1843   \expandafter\let\csname\@tempa\space\expandafter\endcsname
1844                 \csname mst@\@tempa @mv\math@version\space\endcsname
1845 }%
1846 }%
1847 \def\mst@dothe@mathaccentsstuff#1#2{%
1848   \begingroup
1849   \edef\mst@tmp@enc{#2}%
1850   \def\@text@composite##1\@text@composite##2{##2}%
1851   \let\add@accent\@firstoftwo
1852   \let\add@unicode@accent\@firstoftwo
1853   \if1\mst@OneifUniEnc
1854     \ifmst@unimathaccents
1855       % \` -> \grave
1856       \expandafter\xdef\csname mst@grave@mv#1\mst@robustifyingspace\endcsname
1857         {\mst@Umathaccent
1858           7
1859           \number\symmoperatorfont\space
1860           \csname#2\string`\endcsname{}}\relax}%
1861       % \' -> \acute
1862       \expandafter\xdef\csname mst@acute@mv#1\mst@robustifyingspace\endcsname
1863         {\mst@Umathaccent
1864           7
1865           \number\symmoperatorfont\space
1866           \csname#2\string'\endcsname{}}\relax}%
1867       % \v -> \check
1868       \expandafter\xdef\csname mst@check@mv#1\mst@robustifyingspace\endcsname
1869         {\mst@Umathaccent
1870           7
1871           \number\symmoperatorfont\space
1872           \csname#2\string\v\endcsname{}}\relax}%
1873       % \u -> \breve
1874       \expandafter\xdef\csname mst@breve@mv#1\mst@robustifyingspace\endcsname
1875         {\mst@Umathaccent
1876           7
1877           \number\symmoperatorfont\space
1878           \csname#2\string\u\endcsname{}}\relax}%
1879       % \= -> \bar
1880       \expandafter\xdef\csname mst@bar@mv#1\mst@robustifyingspace\endcsname
1881         {\mst@Umathaccent
1882           7
1883           \number\symmoperatorfont\space
1884           \csname#2\string=\endcsname{}}\relax}%
1885       % \. -> \dot

```

```

1886 \expandafter\xdef\csname mst@dot@mv#1\mst@robustifyingspace\endcsname
1887 {\mst@Umathaccent
1888 7
1889 \number\symmoperatorfont\space
1890 \csname#2\string\.\endcsname{}\relax}%
1891 % \" -> \ddot
1892 \expandafter\xdef\csname mst@ddot@mv#1\mst@robustifyingspace\endcsname
1893 {\mst@Umathaccent
1894 7
1895 \number\symmoperatorfont\space
1896 \csname#2\string\.\endcsname{}\relax}%
1897 % \r -> \mathring
1898 \expandafter\xdef\csname mst@mathring@mv#1\mst@robustifyingspace\endcsname
1899 {\mst@Umathaccent
1900 7
1901 \number\symmoperatorfont\space
1902 \csname#2\string\r\endcsname{}\relax}%
1903 % \^ -> \hat
1904 \expandafter\xdef\csname mst@hat@mv#1\mst@robustifyingspace\endcsname
1905 {\mst@Umathaccent
1906 7
1907 \number\symmoperatorfont\space
1908 \csname#2\string\^\endcsname{}\relax}%
1909 % \~ -> \tilde
1910 \expandafter\xdef\csname mst@tilde@mv#1\mst@robustifyingspace\endcsname
1911 {\mst@Umathaccent
1912 7
1913 \number\symmoperatorfont\space
1914 \csname#2\string\~\endcsname{}\relax}%
1915 \else % false branch of ifmst@unimathaccents

```

1.3u used some `\def` but this made the accent macro meanings look slightly different depending on whether the math version being set-up was with an 8bit encoding or TU encoding.

For the sake of uniform treatment we modify this at 1.3v, but this is a bit complicated regarding timing: we need, in absence of `unimathaccents` option, in math versions with an OpenType font, to let the `\acute` etc... acquire back some prior non-`mathastext` meanings. To allow maximal flexibility, these original meaning get stored at begin document only. But `\mst@nonsubduedmathaccents` assigns to `\acute` etc... (in the robust sense with L^AT_EX 2019-10-01 or later) the meaning stored in the macros with the math version in their names. Such `\mst@acute@mvnormal` etc... must thus be ready before `\mst@nonsubduedmathaccents` (or at least before the last such) execution: the code here must get executed after the definition of the «original»-named macros but prior to the (last one, if multiple) `\mst@nonsubduedmathaccents`.

Hence 1.3v delayed a bit the initial execution of this macro (see further down in the code) compared to what happened in 1.3u.

We are in a group but `\AtEndOfPackage` does the right thing.

```

1916 \AtEndOfPackage{\AtBeginDocument{%
1917 \@tfor\@tempa:={grave}{acute}{check}{breve}{bar}%
1918 \dot}{\ddot}{\mathring}{\hat}{\tilde}%
1919 \do
1920 {\expandafter\let

```

```

1921     \csname mst@\@tempa @mv#1\expandafter\endcsname
1922     \csname mst@original@\@tempa\endcsname
1923     \expandafter\let
1924     \csname mst@\@tempa @mv#1\space\expandafter\endcsname
1925     \csname mst@original@\@tempa\space\endcsname}%
1926   }}%
1927 \fi

```

This is needed because the pdf_latex engine branch will use `\DeclareMathAccent` and it creates robust macros with L^AT_EX 2019-10-01 or later. As we want elsewhere in the package code not to have to check if under Unicode engine or not, we need to handle here also some definition of robust macros.

But wouldn't it be simpler to manage `\protected` macros?

```

1928   \ifmst@robust@obsessed@LaTeX@era
1929     \@tfor\@tempa:={grave}{acute}{check}{breve}{bar}%
1930                 {dot}{ddot}{mathring}{hat}{tilde}%
1931     \do
1932     {\expandafter\xdef\csname mst@\@tempa @mv#1\endcsname
1933      {\noexpand\protect
1934       \expandafter\noexpand\csname mst@\@tempa @mv#1 \endcsname}%
1935     }%
1936   \fi
1937 \else % false branch of ifUniEnc

```

`\DeclareMathAccent` works `\globally`. And with L^AT_EX 2019-10-01 or later it creates robust macros.

`\mst@DeclareMathAccent` to work around <https://github.com/latex3/latex2e/issues/216>

```

1938   % \` -> \grave
1939   \expandafter\mst@DeclareMathAccent\expandafter
1940           {\csname mst@grave@mv#1\endcsname}{\mathalpha}{mtooperatorfont}%
1941           {\csname#2\string`\endcsname{}}
1942   % \' -> \acute
1943   \expandafter\mst@DeclareMathAccent\expandafter
1944           {\csname mst@acute@mv#1\endcsname}{\mathalpha}{mtooperatorfont}%
1945           {\csname#2\string'\endcsname{}}
1946   % \v -> \check
1947   \expandafter\mst@DeclareMathAccent\expandafter
1948           {\csname mst@check@mv#1\endcsname}{\mathalpha}{mtooperatorfont}%
1949           {\csname#2\string\v\endcsname{}}
1950   % \u -> \breve
1951   \expandafter\mst@DeclareMathAccent\expandafter
1952           {\csname mst@breve@mv#1\endcsname}{\mathalpha}{mtooperatorfont}%
1953           {\csname#2\string\u\endcsname{}}
1954   % \= -> \bar
1955   \expandafter\mst@DeclareMathAccent\expandafter
1956           {\csname mst@bar@mv#1\endcsname}{\mathalpha}{mtooperatorfont}%
1957           {\csname#2\string=\endcsname{}}
1958   % \. -> \dot
1959   \expandafter\mst@DeclareMathAccent\expandafter

```



```

1960         {\csname mst@dot@mv#1\endcsname}{\mathalpha}{moperatorfont}%
1961         {\csname#2\string\.\endcsname{}}
1962     % \" -> \ddot
1963     \expandafter\mst@DeclareMathAccent\expandafter
1964         {\csname mst@ddot@mv#1\endcsname}{\mathalpha}{moperatorfont}%
1965         {\csname#2\string\.\endcsname{}}
1966     % \r -> \mathring
1967     \expandafter\mst@DeclareMathAccent\expandafter
1968         {\csname mst@mathring@mv#1\endcsname}{\mathalpha}{moperatorfont}%
1969         {\csname#2\string\r\endcsname{}}
1970     % \^ -> \hat
1971     \expandafter\mst@DeclareMathAccent\expandafter
1972         {\csname mst@hat@mv#1\endcsname}{\mathalpha}{moperatorfont}%
1973         {\csname#2\string\^{\endcsname{}}
1974     % \~ -> \tilde
1975     \expandafter\mst@DeclareMathAccent\expandafter
1976         {\csname mst@tilde@mv#1\endcsname}{\mathalpha}{moperatorfont}%
1977         {\csname#2\string\~{\endcsname{}}
1978     \fi
1979     \endgroup
1980 }%
1981 \fi % \ifmst@mathaccents

```

`\MTDeclareVersion` The `\MTDeclareVersion` command is to be used in the preamble to declare a math version. A more complicated variant would also specify a choice of series for the Euler and Symbol font: anyhow Symbol only has the medium series, and Euler has medium and bold, so what is lacking is the possibility to create a version with a bold Euler. There is already one such version: the default bold one. And there is always the possibility to add to the preamble `\SetSymbolFont{mteulervm}{versionname}{U}{zeur}{bx}{n}` if one wants to have a math version with bold Euler characters.

For version 1.1 we add an optional parameter specifying the shape to be used for letters.

Note: (2012/10/24) I really should check whether the user attempts to redefine the ‘normal’ and ‘bold’ versions and issue a warning in that case! Finally done at 1.3w 2019/11/16! Better late than never...

1.3c (2013/12/14) adds an extra optional parameter after all previous ones, to inherit the settings from another version. Typically to be used with [bold]. I take this opportunity to sanitize a bit some line endings to avoid generating (in the preamble, document macros were already careful of course) too many space tokens, at least inside macros. And I modify (correct? perhaps it was on purpose) the strange way I used `\@onlypreamble` in earlier version.

1.3u adds storage of macros holding the needed meanings for `\imath`, `\hbar`, math accents, and the minus symbol, version wise.

1.3w adds the check to forbid `normal` and `bold` as version names.

```

1982 \newcommand*\MTDeclareVersion[6][[]]{%
1983     \edef\mst@declareversionargs{{#1}{#2}{#3}{#4}{#5}{#6}}%
1984     \edef\mst@version{#2}%
1985     \if0\ifx\mst@version\mst@normalversionname0\else
1986         \ifx\mst@version\mst@boldversionname0\else
1987         1\fi\fi
1988     \expandafter\expandafter\expandafter

```

```

1989 \MToDoNotDeclareVersion@\expandafter\@gobblefour
1990 \fi
1991 \relax\DeclareMathVersion{\mst@version}\MTDeclareVersion@
1992 }% \MTDeclareVersion
1993 \newcommand*\MToDoNotDeclareVersion@[1] []{%
1994 \PackageWarningNoLine{mathastext}{You asked to declare a version with name
1995 `~\mst@version'.^^J%
1996 \@spaces Sorry but you are not allowed to do that.^^J%
1997 \@spaces \ifmst@subdued Anyway the `subdued' option is in force\else
1998 Use rather \string\Mathastext\space macro (with no optional argument)\fi
1999 }}%\MToDoNotDeclareVersion@
2000 \newcommand*\MTDeclareVersion@[1] []{%
2001 \edef\mst@tmp{#1}%
2002 \ifx\mst@tmp\empty\else
2003 \global\expandafter\let\csname mv@\mst@version\expandafter\endcsname
2004 \csname mv@#1\endcsname
2005 \PackageInfo{mathastext}
2006 {Math version `~\mst@version\string'\MessageBreak
2007 declared\on@line\MessageBreak
2008 inherits from `~#1\string'\@gobble}%
2009 \fi
2010 \expandafter\MTDeclareVersion@@\mst@declareversionargs
2011 }% \MTDeclareVersion@
2012 \newcommand*\MTDeclareVersion@@[6]{%
2013 \expandafter\edef\csname mst@encoding@\mst@version\endcsname{#3}%
2014 \expandafter\edef\csname mst@family@\mst@version\endcsname{#4}%
2015 \expandafter\edef\csname mst@series@\mst@version\endcsname{#5}%
2016 \expandafter\edef\csname mst@shape@\mst@version\endcsname{#6}%
2017 \expandafter\edef\csname mst@boldvariant@\mst@version\endcsname{\mst@bold}%
2018 \expandafter\edef\csname mst@itdefault@\mst@version\endcsname{\itdefault}%
2019 \expandafter\edef\csname mst@rmdefault@\mst@version\endcsname{\rmdefault}%
2020 \expandafter\edef\csname mst@sfdefault@\mst@version\endcsname{\sfdefault}%
2021 \expandafter\edef\csname mst@ttdefault@\mst@version\endcsname{\ttdefault}%
2022 \expandafter\edef\csname mst@exists@skip@\mst@version\endcsname
2023 {\mst@exists@skip}%
2024 \expandafter\edef\csname mst@forall@skip@\mst@version\endcsname
2025 {\mst@forall@skip}%
2026 \expandafter\edef\csname mst@prime@skip@\mst@version\endcsname
2027 {\mst@prime@skip}%
2028 \def\mst@tmp{#1}%
2029 \ifx\mst@tmp\empty
2030 \ifmst@italic
2031 \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{\mst@ltsh}%
2032 \immediate\write\m@ne{ }%
2033 \PackageInfo{mathastext}{Latin letters in math version `~#2\string'\MessageBreak
2034 declared\on@line\MessageBreak
2035 will use the font #3/#4/#5/\mst@ltsh
2036 \ifmst@frenchmath\space(uppercase: #6)\fi\MessageBreak
2037 Other characters (digits, ...) and \protect\log-like names\MessageBreak

```

```

2038             will be in `#6\string' shape\@gobble}%
2039 \immediate\write\m@ne{%
2040     \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{\mst@ltsh}%
2041     \else
2042     \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{#6}%
2043 \immediate\write\m@ne{%
2044 \PackageInfo{mathastext}{Latin letters in math version `#2\string'\MessageBreak
2045             declared\online\MessageBreak
2046             will use the fonts #3/#4/#5(\mst@bold)/#6\@gobble}%
2047 \immediate\write\m@ne{%
2048     \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{#6}%
2049     \fi
2050     \else % #1 not empty
2051     \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{#1}%
2052 \immediate\write\m@ne{%
2053 \PackageInfo{mathastext}{Latin letters in math version `#2\string'\MessageBreak
2054             declared\online\MessageBreak
2055             will use the font #3/#4/#5/#1%
2056             \ifmst@frenchmath\space(uppercase: #6)\fi\MessageBreak
2057             Other characters (digits, ...) and
2058             \protect\log-like names\MessageBreak
2059             will be in `#6\string' shape\@gobble}%
2060 \immediate\write\m@ne{%
2061     \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{#1}%
2062     \fi

```

Here and elsewhere 1.3za has removed an `\ifmst@nonormalbold` conditional.

```

2063     \SetMathAlphabet{\Mathnormalbold}{#2}{#3}{#4}{\mst@bold}%
2064     {\csname mst@ltshape@\mst@version\endcsname}%
2065 \SetSymbolFont{mtooperatorfont}{#2}{#3}{#4}{#5}{#6}%

```

Since 1.3za (and prior to 1.15f) these math alphabet commands are always defined.

```

2066 \SetMathAlphabet{\Mathbf}{#2}{#3}{#4}{\mst@bold}{#6}
2067 \SetMathAlphabet{\Mathit}{#2}{#3}{#4}{#5}{\itdefault}
2068 \SetMathAlphabet{\Mathsf}{#2}{#3}{\sfdefault}{#5}{#6}
2069 \SetMathAlphabet{\Mathtt}{#2}{#3}{\ttdefault}{#5}{#6}
2070 \ifmst@needeuler
2071     \SetMathAlphabet{\MathEulerBold}{#2}{U}{zeur}{\mst@bold}{n}%
2072 \fi

```

LGRgreeks In the case of option LGRgreeks (selfGreeks), it is expected that the fonts used in each math
selfGreeks versions exist in LGR (OT1) encoding. We first recalculate the shapes to be used for lowercase and uppercase Greek letters depending on the frenchmath and [it/up][g/G]reek options as well as on the (local to this version) shapes for letters and digits.

1.3x replaces `\updefault` by `\MTgreekupdefault` and `\itdefault` by `\MTgreekitdefault`. It also prepares to store two Boolean settings saying whether lowercase respectively uppercase Greek letters will use ‘upright’ or ‘italic’ (LGRgreek(s) only).

The 1.3x refactoring of LGRgreek is done via a decoupling, thus things are done here under `selfGreek` or other Greek options which ultimately serve nothing and conversely things are done here for LGRgreek which are superfluous.

```

2073 \def\mst@greek@lsh@loc{\csname mst@ltshape@\mst@version\endcsname}%
2074 \def\mst@greek@ush@loc{\csname mst@shape@\mst@version\endcsname}%
2075 \mst@greek@lower@uptrue
2076 \expandafter\in@\expanded{\mst@greek@lsh@loc.}{it.,sl.}%
2077 \ifin@\mst@greek@lower@upfalse\fi
2078 \mst@greek@upper@uptrue
2079 \expandafter\in@\expanded{\mst@greek@ush@loc.}{it.,sl.}%
2080 \ifin@\mst@greek@upper@upfalse\fi
2081 \ifmst@itgreek
2082 \def\mst@greek@lsh@loc{MTgreekitdefault}%
2083 \def\mst@greek@ush@loc{MTgreekitdefault}%
2084 \mst@greek@lower@upfalse
2085 \mst@greek@upper@upfalse
2086 \fi
2087 \ifmst@upgreek
2088 \def\mst@greek@lsh@loc{MTgreekupdefault}%
2089 \def\mst@greek@ush@loc{MTgreekupdefault}%
2090 \mst@greek@lower@uptrue
2091 \mst@greek@upper@uptrue
2092 \fi
2093 \ifmst@frenchmath
2094 \ifmst@itgreek\else
2095 \ifmst@upgreek\else
2096 \def\mst@greek@lsh@loc{\csname mst@shape@\mst@version\endcsname}%
2097 \def\mst@greek@ush@loc{\csname mst@shape@\mst@version\endcsname}%
2098 \mst@greek@lower@uptrue
2099 \mst@greek@upper@uptrue
2100 \fi\fi
2101 \fi
2102 \ifcase\mst@greek@select
2103 \or
2104 \def\mst@greek@ush@loc{MTgreekitdefault}%
2105 \mst@greek@upper@upfalse
2106 \or
2107 \def\mst@greek@ush@loc{MTgreekupdefault}%
2108 \mst@greek@upper@uptrue
2109 \fi

```

1.3za refactoring to reduce code duplication; I briefly considered trying to enhance `\MTgreek-` font to work also with `LGRgreeks` and `selfGreeks` but I have dropped the idea for now.

```

2110 \ifmst@LGRgreeks \def\mst@greekfont{#4}\fi
2111 \ifmst@selfGreeks\def\mst@greekfont{#4}\fi
2112 \ifmst@LGRgreek
2113 \SetSymbolFont{mtgreekup}{#2}{LGR}{\mst@greekfont}{#5}{\MTgreekupdefault}%
2114 \SetSymbolFont{mtgreekit}{#2}{LGR}{\mst@greekfont}{#5}{\MTgreekitdefault}%
2115 \SetMathAlphabet{\mathgreekupbold}{#2}{LGR}{\mst@greekfont}
2116 \{\mst@bold}{\MTgreekupdefault}%
2117 \SetMathAlphabet{\mathgreekitbold}{#2}{LGR}{\mst@greekfont}
2118 \{\mst@bold}{\MTgreekitdefault}%

```

This is where the shape of uppercase/lowercase Greek letters is recorded, for `\MTversion's` triggered `\MTcustomgreek` to do the right thing.

```

2119     \expandafter\let\csname ifmst@greek@\mst@version @upper@up\expandafter\endcsname
2120         \csname ifmst@greek@upper@up\endcsname
2121     \expandafter\let\csname ifmst@greek@\mst@version @lower@up\expandafter\endcsname
2122         \csname ifmst@greek@lower@up\endcsname
2123 \immediate\write\m@ne{}%
2124 \PackageInfo{mathastext}{Greek letters (upper:
2125     `\

```

`\MTversion` This is a wrapper around L^AT_EX's `\mathversion`: here we have an optional argument allowing a quick and easy change of the text fonts additionally to the math fonts. Present already in the initial version of the package (January 2011.)

`\MTversion@` 1.15: some modifications for the subdued option vs LGRgreek and for the math muskips after `\exists` and `\forall`.

1.2: with the subdued option sets the math alphabets in the normal and bold math versions do not apply to operator names and non-alphabetical symbols. The switch for braces is left as it is.

1.2b: with the subdued option, the italic corrections are not added. Else, we check the shape of letters in this version. Also, there was a bug since 1.15: the values of the math skips were taken not from the settings for the math version (#2) but from those of the optional argument (#1), if present...

1.3: activation of italic corrections is now separated from actual math activation of letters.

1.3c: a starred variant is added which does not modify the text fonts, only the math set-up.

1.3d: replaced in `\MTversion@` things like `\edef\mst@encoding{...}` and `\renewcommand{\encodingdefault}` by `\edef\encodingdefault{...}` etc... All those `\mst@...` things were useless. I also redefine `\seriesdefault` rather than `\mddefault`.

1.3d: mechanism of restoration of Greek in subdued normal and bold versions has been to all cases, and not only for the LGRgreek option.

1.3u: version savvy (i.e. font-encoding savvy) minus sign, `\hbar`, `\imath`, math accents.

1.3x: Booleans recovered from stored data in the math version will configure the things `\MTcustomgreek` do, under LGRgreek option.

```

2166 \newcommand*\MTversion {\@ifstar\MTversion@s\MTversion@ }
2167 \newcommand*\MTversion@s [1]{\mathversion{#1}\MTversion@@ }
2168 \newcommand*\MTversion@ [2] [] {%
2169     \mathversion{#2}% defines \math@version as expanded #2
2170     \edef\mst@tmpa{#1}%
2171     \ifx\mst@tmpa\empty
2172         \let\mst@tmp\math@version
2173     \else
2174         \let\mst@tmp\mst@tmpa
2175     \fi
2176     \edef\encodingdefault {\csname mst@encoding@\mst@tmp\endcsname}%
2177     \edef\familydefault   {\csname mst@family@\mst@tmp\endcsname}%
2178     \edef\seriesdefault   {\csname mst@series@\mst@tmp\endcsname}%
2179     \edef\shapedefault    {\csname mst@shape@\mst@tmp\endcsname}%
2180     \edef\bfdefault       {\csname mst@boldvariant@\mst@tmp\endcsname}%
2181     \edef\itdefault       {\csname mst@itdefault@\mst@tmp\endcsname}%
2182     \edef\rmdefault       {\csname mst@rmdefault@\mst@tmp\endcsname}%
2183     \edef\sfdefault       {\csname mst@sfdefault@\mst@tmp\endcsname}%
2184     \edef\ttdefault       {\csname mst@ttdefault@\mst@tmp\endcsname}%
2185     \usefont{\encodingdefault}{\familydefault}{\seriesdefault}{\shapedefault}%
2186     \MTversion@@
2187 }% \MTversion@

```

1.3j has a stronger subdued which does `\MTnormalprime`, `\MTnormalexists`, `\MTnormalforall` rather than setting the skips to 0mu. Hence `\MTversion` by default should do `\MTprimedoesskip`, `\MTexistsdoesskip`, `\MTforalldoesskip`.

1.3u drops the argument, as the info is in `\math@version` from L^AT_EX2e code.

```

2188 \newcommand*\MTversion@@ {%
2189     \MTexistsdoesskip
2190     \MTforalldoesskip
2191     \MTprimedoesskip
    v1.15e: muskips.
2192     \mst@exists@muskip\csname mst@exists@skip@\math@version\endcsname\relax
2193     \mst@forall@muskip\csname mst@forall@skip@\math@version\endcsname\relax
    v1.2: muskip for \prime.
2194     \mst@prime@muskip\csname mst@prime@skip@\math@version\endcsname\relax
    v1.2b: italic corrections except for italic/slanted (sic) letters, and of course except in the subdued
normal and bold math versions.
    v1.3: by default, letters are made mathematically active, even if italic corrections are not
used, to allow the action of \MTsetmathskips.
2195     \edef\mst@tmpa{\csname mst@ltshape@\math@version\endcsname}%
2196     \edef\mst@tmpb{\csname mst@shape@\math@version\endcsname}%
    v1.15c: extending subdued to LGRgreek.
    v1.15f: subdueing math alphabets in a simpler way than in 1.15e.
    v1.2b: subdueing the activation of characters in math mode.
    v1.2d: special treatment of the asterisk.
    v1.3d: extended LGRgreek mechanism of activation/restoration of Greek to all cases.
    v1.3j: use of \MTEverymathdefault, which includes \MTicinmath, but must be corrected
then according to shape of letters and presence or absence of option frenchmath. We do only
\def\mst@ITcorr{\ifnum\fam=\m@ne\/\fi} and not \MTICinmath to not overwrite some user-
defined \MTEverymathdefault. Code for italic corrections or not according to letter shape is
executed after \MTEverymathdefault which limits a bit user customizing possibilities, but if I
moved it later, I would possibly have to put inside the \MTicinmath the check for it ot sl.
Similarly the \MTcustomgreek always executed (if not subdued).
2197     \MTmathoperatorsobeymathxx
2198     \MTEverymathdefault
2199     \MTcustomizenewmcodes
2200     \@for\mst@tmpc:=it,sl\do{\ifx\mst@tmpc\mst@tmpa\MTnoicinmath\fi}%
2201     \ifmst@frenchmath
2202         \def\mst@ITcorr{\ifnum\fam=\m@ne\/\fi}%
2203         \@for\mst@tmpc:=it,sl\do{\ifx\mst@tmpc\mst@tmpb\MTnoICinmath\fi}%
2204     \fi
    1.3j has a stronger subdued which does \MTnormalprime, \MTnormalexists, \MTnormalforall
rather than simply setting the skips to 0mu. Note: \MTnormalprime is done as part of \MTEv-
erymathoff.
    The subdued mode does not undo the effect of the frenchmath option on uppercase Latin
letters: they will use the same shape as digits and operator names! (This should have been made
more prominent in user manual more than ten years ago, but is done only today 2023/12/28...).
2205     \ifmst@subdued
2206         \ifx\math@version\mst@normalversionname
2207             \mst@restorealalphabets
2208             \MTstandardgreek
2209             \MTmathoperatorsdonotobeymathxx
2210             \MTnormalexists

```

```

2211      \MTnormalforall
2212      \MTeverymathoff
2213      \MTresetnewmcodes

```

1.3t adds better compatibility with subdued mode for `\math/\jmath` and perfect compatibility for the minus sign.

1.3u extends this further to allow per-math-version meanings for them.

```

2214      \mst@subduedhbar
2215      \mst@subduedinodot
2216      \mst@subduedmathaccents
2217      \mst@subduedminus
2218      \else
2219      \ifx\math@version\mst@boldversionname
2220      \mst@restorealphabets
2221      \MTstandardgreek
2222      \MTmathoperatorsdonotobeymathxx
2223      \MTnormalexists
2224      \MTnormalforall
2225      \MTeverymathoff
2226      \MTresetnewmcodes
2227      \mst@subduedhbar
2228      \mst@subduedinodot
2229      \mst@subduedmathaccents
2230      \mst@subduedminus
2231      \else
2232      \mst@setalphabets

```

1.3x addition for `\MTcustomgreek` under `LGRgreeks` option.

```

2233      \expandafter\let\csname ifmst@greek@upper@up\expandafter\endcsname
2234      \csname ifmst@greek@\math@version @upper@up\endcsname
2235      \expandafter\let\csname ifmst@greek@lower@up\expandafter\endcsname
2236      \csname ifmst@greek@\math@version @lower@up\endcsname
2237      \MTcustomgreek
2238      \mst@nonsubduedhbar
2239      \mst@nonsubduedinodot
2240      \mst@nonsubduedmathaccents
2241      \mst@nonsubduedminus
2242      \fi
2243      \fi
2244      \else

```

1.3x addition for `\MTcustomgreek` under `LGRgreek` option.

```

2245      \expandafter\let\csname ifmst@greek@upper@up\expandafter\endcsname
2246      \csname ifmst@greek@\math@version @upper@up\endcsname
2247      \expandafter\let\csname ifmst@greek@lower@up\expandafter\endcsname
2248      \csname ifmst@greek@\math@version @lower@up\endcsname
2249      \MTcustomgreek % new with 1.3d
2250      \mst@nonsubduedhbar
2251      \mst@nonsubduedinodot
2252      \mst@nonsubduedmathaccents
2253      \mst@nonsubduedminus

```



```

2254     \fi
2255 }% \MTversion@@
2256 \let\MathastextVersion\MTversion
2257 \let\Mathastextversion\MTversion
2258 \let\MTVersion\MTversion
2259 \let\mathastextversion\MTversion

```

`\MTWillUse` This is a preamble-only command, which can be used more than once, only the latest one counts. Sets up the math fonts in the normal and bold versions, as does `\Mathastext`.

```

2260 \newcommand*\MTWillUse [5] [] {
2261   \MTencoding{#2}
2262   \MTfamily{#3}
2263   \MTseries{#4}
2264   \MTshape{#5}
2265   \ifmst@italic\MTlettershape{\itdefault}\fi % was missing in v 1.14 and prior
2266   \edef\mst@tmp{#1}
2267   \ifx\mst@tmp\empty\else\MTlettershape{#1}\fi
2268   \Mathastext}
2269 \let\MathastextWillUse\MTWillUse
2270 \let\Mathastextwilluse\MTWillUse

```

`\Mathastext` The command `\Mathastext` can be used anywhere in the preamble and any number of time, the last one is the one that counts.

In version 1.1 we have two fonts: they only differ in shape. The `mtletterfont` is for letters, and the `mtoperatorfont` for digits and log-like operator names. The default is that both are upright.

Starting with version 1.12, an optional argument makes `\Mathastext` act as the declaration of a math version, to be later used in the document.

Versions 1.15x brought some adaptations related to the subdued option.

1.3c adds a second optional parameter to inherit previous settings from another version; mostly done to inherit the bold version fonts for symbols and large symbols. This is done in `\MTDeclareVersion`.

1.3j moves the code related to `\MTicinmath` from `\Mathastext@` to `\AtBeginDocument` (code depending on whether subdued option in use). But we omit for this from `\MTicinmath` the `\MTmathactiveletters` and issue the latter during loading of package, hence allowing `\MTmath-standardletters` to be effective in the preamble.

I forgot to document that under subdued option the `\Mathastext` command without optional parameter does not any `\SetSymbolFont` etc... but it has a few other tasks to complete nevertheless.

1.3u fixes some long-standing bug that `\Mathastext` did not repeat some font-encoding dependent things: they got done only once during package loading (things regarding the `\hbar`, `\imath`, the math accents and the minus sign). They are now part of the contents of `\Mathastext` macro itself (which is executed during package loading).

1.3x has refactored the LGRgreek associated math fonts.

```

2271 \def\Mathastext {\@ifnextchar [\Mathastext@declare\Mathastext@ }
2272 \def\Mathastext@declare [#1]{%
2273   \edef\mst@tmp{#1}%
2274   \ifx\mst@tmp\empty
2275     \expandafter\@firstoftwo

```

```

2276 \else\expandafter\@secondoftwo
2277 \fi
2278 \Mathastext@
2279 {\MTDeclareVersion[\mst@ltsh]{#1}{\mst@enc}{\mst@fam}{\mst@ser}{\mst@opsh}}%
2280 }% \Mathastext@declare
2281 \def\Mathastext@ {%
2282 \mst@update@greeksh
2283 \edef\mst@encoding@normal{\mst@enc}%
2284 \edef\mst@family@normal{\mst@fam}%
2285 \edef\mst@series@normal{\mst@ser}%
2286 \edef\mst@shape@normal{\mst@opsh}%
2287 \edef\mst@ltshape@normal{\mst@ltsh}%
2288 \edef\mst@itdefault@normal{\itdefault}%
2289 \edef\mst@rmdefault@normal{\rmdefault}%
2290 \edef\mst@sfdefault@normal{\sfdefault}%
2291 \edef\mst@ttdefault@normal{\ttdefault}%
2292 \edef\mst@boldvariant@normal{\mst@bold}%
2293 \edef\mst@exists@skip@normal{\mst@exists@skip}%
2294 \edef\mst@forall@skip@normal{\mst@forall@skip}%
2295 \edef\mst@prime@skip@normal{\mst@prime@skip}%
2296 \edef\mst@encoding@bold{\mst@enc}%
2297 \edef\mst@family@bold{\mst@fam}%
2298 \edef\mst@series@bold{\mst@bold}%
2299 \edef\mst@shape@bold{\mst@opsh}%
2300 \edef\mst@ltshape@bold{\mst@ltsh}%
2301 \edef\mst@boldvariant@bold{\mst@bold}%
2302 \edef\mst@itdefault@bold{\itdefault}%
2303 \edef\mst@rmdefault@bold{\rmdefault}%
2304 \edef\mst@sfdefault@bold{\sfdefault}%
2305 \edef\mst@ttdefault@bold{\ttdefault}%
2306 \edef\mst@exists@skip@bold{\mst@exists@skip}%
2307 \edef\mst@forall@skip@bold{\mst@forall@skip}%
2308 \edef\mst@prime@skip@bold{\mst@prime@skip}%
2309 \ifmst@subdued

```

Since 1.3j this branch is actually almost superfluous, as entering normal or bold with `\MTversion` does `\MTnormalexists`, `\MTnormalforall`, and `\MTnormalprime`. But some default values are needed if the user insists on issuing `\MTexistsdoesskip`, etc... nevertheless.

```

2310 \def\mst@exists@skip@normal{0mu}%
2311 \def\mst@forall@skip@normal{0mu}%
2312 \def\mst@prime@skip@normal{0mu}%
2313 \def\mst@exists@skip@bold{0mu}%
2314 \def\mst@forall@skip@bold{0mu}%
2315 \def\mst@prime@skip@bold{0mu}%
2316 \else % not subdued
2317 \ifmst@italic
2318 \ifmst@frenchmath
2319 \mst@exists@muskip\mst@exists@skip\relax
2320 \mst@forall@muskip\mst@forall@skip\relax
2321 \mst@prime@muskip\mst@prime@skip\relax

```

```

2322     \else
2323         \def\mst@exists@skip@normal{0mu}%
2324         \def\mst@forall@skip@normal{0mu}%
2325         \def\mst@prime@skip@normal{0mu}%
2326         \def\mst@exists@skip@bold{0mu}%
2327         \def\mst@forall@skip@bold{0mu}%
2328         \def\mst@prime@skip@bold{0mu}%
2329     \fi
2330 \else
2331     \mst@exists@muskip\mst@exists@skip\relax
2332     \mst@forall@muskip\mst@forall@skip\relax
2333     \mst@prime@muskip\mst@prime@skip\relax
2334 \fi
2335 \fi

```

Here and elsewhere 1.3za has removed usage of an `\ifmst@nonormalbold` conditional which was added at 1.15f.

```

2336 \SetMathAlphabet{\Mathnormalbold}{normal}{\mst@encoding@normal}%
2337             {\mst@family@normal}%
2338             {\mst@boldvariant@normal}%
2339             {\mst@ltshape@normal}%
2340 \SetMathAlphabet{\Mathnormalbold}{bold}{\mst@encoding@bold}%
2341             {\mst@family@bold}%
2342             {\mst@boldvariant@bold}%
2343             {\mst@ltshape@bold}%
2344 \ifmst@subdued\else
2345 \SetSymbolFont{mtletterfont}{normal}{\mst@encoding@normal}%
2346             {\mst@family@normal}%
2347             {\mst@series@normal}%
2348             {\mst@ltshape@normal}%
2349 \SetSymbolFont{mtletterfont}{bold} {\mst@encoding@bold}%
2350             {\mst@family@bold}%
2351             {\mst@series@bold}%
2352             {\mst@ltshape@bold}%
2353 \SetSymbolFont{mtooperatorfont}{normal}{\mst@encoding@normal}%
2354             {\mst@family@normal}%
2355             {\mst@series@normal}%
2356             {\mst@shape@normal}%
2357 \SetSymbolFont{mtooperatorfont}{bold} {\mst@encoding@bold}%
2358             {\mst@family@bold}%
2359             {\mst@series@bold}%
2360             {\mst@shape@bold}%

```

1.3za removes the 1.15f added conditional checks.

```

2361 \SetMathAlphabet{\Mathbf}{normal}{\mst@encoding@normal}%
2362             {\mst@family@normal}%
2363             {\mst@series@bold}%
2364             {\mst@shape@normal}%
2365 \SetMathAlphabet{\Mathbf}{bold}{\mst@encoding@bold}%
2366             {\mst@family@bold}%

```

```

2367             {\mst@series@bold}%
2368             {\mst@shape@bold}%
2369 \SetMathAlphabet{\Mathit}{normal}{\mst@encoding@normal}%
2370             {\mst@family@normal}%
2371             {\mst@series@normal}%
2372             {\mst@itdefault@normal}%
2373 \SetMathAlphabet{\Mathit}{bold}{\mst@encoding@bold}%
2374             {\mst@family@bold}%
2375             {\mst@series@bold}%
2376             {\mst@itdefault@bold}%
2377 \SetMathAlphabet{\Mathsf}{normal}{\mst@encoding@normal}%
2378             {\mst@sfdefault@normal}%
2379             {\mst@series@normal}%
2380             {\mst@shape@normal}%
2381 \SetMathAlphabet{\Mathsf}{bold}{\mst@encoding@bold}%
2382             {\mst@sfdefault@bold}%
2383             {\mst@series@bold}%
2384             {\mst@shape@bold}%
2385 \SetMathAlphabet{\Mathtt}{normal}{\mst@encoding@normal}%
2386             {\mst@ttdefault@normal}%
2387             {\mst@series@normal}%
2388             {\mst@shape@normal}%
2389 \SetMathAlphabet{\Mathtt}{bold}{\mst@encoding@bold}%
2390             {\mst@ttdefault@bold}%
2391             {\mst@series@bold}%
2392             {\mst@shape@bold}%
2393 \fi % de \ifmst@subdued

```

`\MathEulerBold` 1.14c: We reset `mteulervm` and `\MathEulerBold` here as the variant for bold may have been changed by the user via `\Mathastextboldvariant{m}`; and we should keep this local to math versions.

```

2394 \ifmst@needeuler
2395   \SetSymbolFont{mteulervm}{bold}{U}{zeur}{\mst@boldvariant@normal}{n}%
2396   \SetMathAlphabet{\MathEulerBold}{normal}%
2397     {U}{zeur}{\mst@boldvariant@normal}{n}%
2398   \SetMathAlphabet{\MathEulerBold}{bold}%
2399     {U}{zeur}{\mst@boldvariant@bold}{n}%
2400 \fi

2401 \ifmst@needsymbol\SetSymbolFont{mtpsymbol}{bold}%
2402   {U}{psy}{\mst@boldvariant@bold}{n}%
2403 \fi

```

LGRgreek* LGRgreek, LGRgreeks, selfGreek, and selfGreeks options.

selfGreek* 1.3x has refactored the LGRgreek associated math fonts.

1.3za adds the math alphabets `\mathgreekitbold` and `\mathgreekupbold`. And it executes this code also in `subdued` mode, because anyhow the symbolfonts `mtgreekup` and `mtgreekit` and associated alphabets have been declared also, at time of loading the package, so not doing it here means that effect of `\MTgreekfont` would be ignored; which was probably a bug. And

by the way, documentation says `\MTgreekfont` has no effect under `LGRgreeks` and `selfGreeks` option so we need to enforce it here (for time being).

```

2404 \ifmst@LGRgreeks \edef\mst@greekfont{\mst@fam}\fi
2405 \ifmst@selfGreeks\edef\mst@greekfont{\mst@fam}\fi
2406 \ifmst@LGRgreek
2407 \SetSymbolFont{mtgreekup}{normal}{LGR}%
2408     {\mst@greekfont}{\mst@series@normal}{\MTgreekupdefault}%
2409 \SetSymbolFont{mtgreekup}{bold}{LGR}%
2410     {\mst@greekfont}{\mst@boldvariant@bold}{\MTgreekupdefault}%
2411 \SetSymbolFont{mtgreekit}{normal}{LGR}%
2412     {\mst@greekfont}{\mst@series@normal}{\MTgreekitdefault}%
2413 \SetSymbolFont{mtgreekit}{bold}{LGR}%
2414     {\mst@greekfont}{\mst@boldvariant@bold}{\MTgreekitdefault}%
2415 \SetMathAlphabet{\mathgreekupbold}{normal}{LGR}%
2416     {\mst@greekfont}{\mst@boldvariant@normal}{\MTgreekupdefault}%
2417 \SetMathAlphabet{\mathgreekupbold}{bold}{LGR}%
2418     {\mst@greekfont}{\mst@boldvariant@bold}{\MTgreekupdefault}%
2419 \SetMathAlphabet{\mathgreekitbold}{normal}{LGR}%
2420     {\mst@greekfont}{\mst@boldvariant@normal}{\MTgreekitdefault}%
2421 \SetMathAlphabet{\mathgreekitbold}{bold}{LGR}%
2422     {\mst@greekfont}{\mst@boldvariant@bold}{\MTgreekitdefault}%
2423 \else
2424 \ifmst@selfGreek
2425 \SetSymbolFont{mtselfGreekgfont}{normal}{OT1}%
2426     {\mst@greekfont}{\mst@series@normal}{\mst@greek@ush}%
2427 \SetSymbolFont{mtselfGreekgfont}{bold}{OT1}%
2428     {\mst@greekfont}{\mst@boldvariant@bold}{\mst@greek@ush}%
2429 \fi
2430 \fi

```

1.3za adds the log message in case of `selfGreek` option.

```

2431 \ifmst@subdued
2432 \else
2433 \mst@infoline{Latin letters in the `normal\string', resp. `bold\string',}%
2434 \mst@infoline{math versions are now set up to use the fonts}%
2435 \mst@infoline{\mst@encoding@normal/\mst@family@normal/\mst@series@normal
2436     /\mst@ltshape@normal, resp.
2437     \mst@encoding@normal/\mst@family@normal/\mst@boldvariant@normal
2438     /\mst@ltshape@normal.}%
2439 \ifmst@frenchmath\mst@infoline{(uppercase: \mst@shape@normal)}\fi
2440 \ifmst@LGRgreek
2441 \mst@infoline{Greek letters (upper:
2442     ` \ifmst@greek@upper@up\MTgreekupdefault\else\MTgreekitdefault\fi\string',
2443     lower:
2444     ` \ifmst@greek@lower@up\MTgreekupdefault\else\MTgreekitdefault\fi\string')}
2445 will use font}%
2446 \mst@infoline{family ` \mst@greekfont\string' (LGR).}%
2447 \else
2448 \ifmst@selfGreek

```

```

2449     \mst@infoline{Capital Greek letters (shape `\

1.3zb moves this info line last and also explicitly mentions italic or frenchmath (here and at some other locations above).



```

2493 \ifmst@subdued
2494 \mst@infoline{Subdued `\

```


```

```

2496 \ifmst@italic
2497   \mst@infoline{The \ifmst@frenchmath frenchmath \else
2498                   italic \fi option is in effect.}%
2499 \fi
2500 }% \Mathastext@
2501 \let\mathastext\Mathastext
2502 \Mathastext

```

Additional appropriate messages to the terminal and the log.

```

2503 \ifmst@eulergreek
2504   \mst@infoline{Greek letters will use the Euler font.}%
2505   \mst@infoline{Use \string\MathastextEulerScale{<factor>} to scale the
2506                 font.}%
2507   \ifmst@subdued
2508     \mst@infoline{(subdued mode: `normal\string' and `bold\string' math ver-
2509                   sions)%
2510   \mst@infoline{\space keep the default Greek letters).}%
2511   \fi
2512 \else
2513 \ifmst@symbolgreek
2514   \mst@infoline{Greek letters will use the PostScript Symbol font.}%
2515   \mst@infoline{Use \string\MathastextSymbolScale{<factor>} to scale the font.}%
2516   \ifmst@subdued
2517     \mst@infoline{(subdued mode: `normal\string' and `bold\string' math ver-
2518                   sions)%
2519   \mst@infoline{\space keep the default Greek letters).}%
2520   \fi
2521 \fi

```

Math sizes I took the code for \Huge and \HUGE from the [moresize](#) package of Christian CORNELSSEN

```

2520 \ifmst@defaultsizes\else
2521 \providecommand\@xxxpt{29.86}
2522 \providecommand\@xxxvpt{35.83}
2523 \ifmst@twelve
2524 \def\Huge{\@setfontsize\Huge\@xxxpt{36}}
2525 \def\HUGE{\@setfontsize\HUGE\@xxxvpt{43}}
2526 \mst@infoline{\string\Huge\space and \string\HUGE\space have been (re)-defined.}
2527 \else
2528 \def\HUGE{\@setfontsize\HUGE\@xxxpt{36}}
2529 \mst@infoline{\string\HUGE\space has been (re)-defined.}
2530 \fi

```

I choose rather big subscripts.

```

2531 \def\defaultscrisptratio{.8333}
2532 \def\defaultscrispstratio{.7}
2533 \DeclareMathSizes{9}{9}{7}{5}
2534 \DeclareMathSizes{\@xpt}{\@xpt}{8}{6}
2535 \DeclareMathSizes{\@xipt}{\@xipt}{9}{7}
2536 \DeclareMathSizes{\@xiipt}{\@xiipt}{10}{8}
2537 \DeclareMathSizes{\@xivpt}{\@xivpt}{\@xiipt}{10}

```

```

2538 \DeclareMathSizes{\@xvipt}{\@xvipt}{\@xivpt}{\@xipt}
2539 \DeclareMathSizes{\@xxpt}{\@xxpt}{\@xvipt}{\@xivpt}
2540 \DeclareMathSizes{\@xxvpt}{\@xxvpt}{\@xxpt}{\@xvipt}
2541 \DeclareMathSizes{\@xxxpt}{\@xxxpt}{\@xxvpt}{\@xxpt}
2542 \DeclareMathSizes{\@xxxvpt}{\@xxxvpt}{\@xxxpt}{\@xxvpt}
2543 \mst@infoline{mathastext has declared larger sizes for subscripts.}
2544 \mst@infoline{To keep LaTeX defaults, use option `defaultmathsizes\string'.}
2545 \fi

```

`\MTeverymathoff` 1.3i 2016/01/06 Compatibility patch with `\url` from `url.sty` and `\url/\nolinkurl` from `hyperref.sty`.

1.3j 2016/01/15 renamed the macro from `\MTactivemathoff` to `\MTeverymathoff`, as it is not exclusively a matter of math active characters due to `\MTeasynonlettersdonotobeymathxx`.

1.3o 2016/05/03 adds `\MTdonotfixfonts`. Operant with Lua^AT_EX only.

```

2546 \newcommand*\MTeverymathoff {%
2547     \MTnormalasterisk
2548     \MTnormalprime
2549     \MTnonlettersdonotobeymathxx
2550     \MTeasynonlettersdonotobeymathxx
2551     \MTmathstandardletters
2552     \MTdonotfixfonts
2553 }%
2554 \AtBeginDocument {%
2555     \@ifpackageloaded{hyperref}
2556     {\def\Hurl{\begingroup\MTeverymathoff\Url}}
2557     {\@ifpackageloaded{url}{\DeclareUrlCommand\url{\MTeverymathoff}}{}}%
2558 }%

```

`\MTeverymathdefault` 1.3j 2016/01/15 Customizable command which gets executed by `\MTversion` except when switching to normal/bold if option `subdued`. The included `\MTicinmath` does `\MTmathactiveletters` which will also activate the math skips around letters.

The `\MTeverymathdefault` does not include `\MTmathoperatorsobeymathxx` as the latter does not correspond to something done during execution of `\the\everymath`.

Should I put `\let\newmcodes@mst@newmcodes@` here too ? No, it is not done at `everymath`.

During the loading, the (non `subdued`) package does `\MTactiveasterisk` (if option `asterisk`), `\MTprimedoesskip`, `\MTeasynonlettersobeymathxx` and `\MTmathactiveletters`. There is some code at begin document for decisions about italic corrections, this code does not emit again `\MTmathactiveletters`, hence a `\MTmathstandardletters` in the preamble is not overruled. Furthermore the at begin document code will not overrule user emitted `\MTnoicinmath` etc... commands in the preamble.

And user can employ `\MTnormalexists`, etc..., from inside the preamble, it will not be overruled (as it is delayed at begin document to after `mathastext` dealings).

1.3o 2016/05/03 adds `\MTfixfonts`. Operant with Lua^AT_EX only.

```

2559 \newcommand*\MTeverymathdefault {%
2560     \MTactiveasterisk
2561     \MTprimedoesskip
2562     \MTeasynonlettersobeymathxx
2563     \MTicinmath
2564     \MTfixfonts

```


2565 }%

Things to do last "at begin document"

```
2566 \AtBeginDocument{%
2567   \everymath\expandafter{\the\everymath
2568     \mst@the\mst@do@nonletters \let\mst@the@gobble
2569     \mst@theeasy\mst@do@easynonletters \let\mst@theeasy@gobble
2570     \mst@thef\mst@do@az \let\mst@thef@gobble
2571     \mst@theF\mst@do@AZ \let\mst@theF@gobble}%
2572 \everydisplay\expandafter{\the\everydisplay
2573   \mst@the\mst@do@nonletters \let\mst@the@gobble
2574   \mst@theeasy\mst@do@easynonletters \let\mst@theeasy@gobble
2575   \mst@thef\mst@do@az \let\mst@thef@gobble
2576   \mst@theF\mst@do@AZ \let\mst@theF@gobble}%
```

1.3j: moved here to be executed at begin document (and not from inside `\Mathastext@`.)
The `\MTeverymathoff` does: `\MTnormalasterisk`, `\MTnormalprime`, `\MTnonlettersdonotobeymathxx`, `\MTeasynonlettersdonotobeymathxx`, `\MTmathstandardletters`.

1.3m: doing `\MTmathactiveletters` in subdued mode immediately after `\begin{document}` resulted in errors because `\mst@itcorr` had been left undefined. We thus add `\MTnoicinmath` to the subdued initialization.

Since 1.3n there is `\MTresetnewmcodes` which needs `\mst@originalnewmcodes@`, itself defined at begin document. Thus we have wrapped the whole thing in `\AtEndOfPackage` (at 1.3u whole code directly moved at end of package).

And 1.3p adds here `\MTcustomizenewmcodes` which had been regrettably forgotten by 1.3n.

1.3t adds some extras to handle correctly the minus sign and dotless i and j in subdued mode, even in case of usage with fontspec.

1.3u similarly lets math accents be correctly subdued.

1.3v adapts to `\hbar` and math accents now being robust with L^AT_EX 2019-10-01 or later.

1.3w pays attention to the fact that `\hbar` may well be a `\mathchar` and not a robust macro!

And no need to worry about `\hbar<space>` finally in revised code.

```
2577 \MTcustomizenewmcodes
2578 \let\mst@original@hbar\hbar
2579 \let\mst@original@imath\imath
2580 \let\mst@original@jmath\jmath
2581 \@tfor\@tempa:={grave}{acute}{check}{breve}{bar}%
2582             {dot}{ddot}{mathring}{hat}{tilde}%
2583 \do
2584 {\expandafter\let\csname mst@original@\@tempa\expandafter\endcsname
2585   \csname \@tempa\endcsname
2586 \expandafter\let\csname mst@original@\@tempa\space\expandafter\endcsname
2587   \csname \@tempa\space\endcsname
2588 }%
2589 \ifmst@XeOrLua
2590   \edef\mst@subduedminus
2591     {\mst@Umathcodenum`\noexpand\-=\the\mst@Umathcodenum`\-\relax}%
2592 \else
2593   \edef\mst@subduedminus{\mathcode`\noexpand\-=\the\mathcode`\-\relax}%
2594 \fi
2595 \ifmst@subdued
```

```

2596 \MTeverymathoff
2597 \MTreresetnewmcodes
2598 \MTnoicinmath
2599 \MTmathoperatorsdonotobeymathxx
2600 %\mst@subduedhbar
2601 \let\inodot\imath
2602 \let\jnodot\jmath
2603 %\mst@subduedmathaccents
2604 \mst@subduedminus
2605 \else
2606 \mst@nonsubduedhbar
    1.3v needs this \mst@nonsubduedmathaccents to get executed later (see code comments for
    \mst@dothe@mathaccentsstuff).
2607 % \mst@nonsubduedmathaccents % will get executed later
2608 \mst@nonsubduedminus
    1.3j: an earlier version of this code was earlier part of \Mathastext@. As we are now in
    \AtBeginDocument we try to be careful not to overwrite \MTicinmath, \MTnoicinmath, \MTi-
    calsoinmathxx, ... if issued by the user in the preamble, though. And we do not execute
    \MTmathactiveletters, it is issued by the package at loading time in order to allow user to
    cancel it if desired from inside the preamble.
2609 \ifx\mst@itcorr\@undefined
2610 \def\mst@itcorr{\ifnum\fam=\m@ne\/\fi}%
2611 \@for\mst@tmp:=it,sl\do
2612 {\ifx\mst@tmp\mst@ltshape@normal\let\mst@itcorr\@empty\fi }%
2613 \fi
2614 \ifx\mst@ITcorr\@undefined
2615 \let\mst@ITcorr\mst@itcorr
2616 \ifmst@frenchmath
2617 \def\mst@ITcorr{\ifnum\fam=\m@ne\/\fi}%
2618 \@for\mst@tmp:=it,sl\do
2619 {\ifx\mst@tmp\mst@shape@normal\let\mst@ITcorr\@empty\fi }%
2620 \fi
2621 \fi
2622 \fi
2623 }% \AtBeginDocument
2624 \AtEndOfPackage{\AtBeginDocument{\ifmst@subdued\else\mst@nonsubduedmathaccents\fi}}%

```

subdued 1.15: The subdued code was initiated in May 2011. I returned to `mathastext` on Sep 24, 2012, and decided to complete what I had started then, but in the mean time I had forgotten almost all of the little I knew about L^AT_EX macro programming.

The point was to extract the data about how are ‘letters’ and ‘operators’ in the normal and bold versions, through obtaining the math families of ‘a’ and ‘1’, respectively¹. Due to the reassignments done for characters by `mathastext` I also had decided in 2011 that the OT1 encoding, if detected, should be replaced by T1

¹but the *euler* package for example assigns the digits to the *letters* symbol font...

1.15d: Oct 13, 2012. The `\mathcode` thing has to be used with care under Unicode engines. Unfortunately the `\luatexUmathcode` macro is helpless as it is not possible to know if it will return a legacy mathcode or a Unicode mathcode. On the other hand the much saner `\XeTeXmathcodenum` always return a Unicode mathcode.

UPDATE for `mathastext` 1.3 (2013/09/02): since the release of `lualatex` as included in TL2013, `\luatexUmathcodenum` behaves as `\XeTeXmathcodenum` so `mathastext` 1.3 treats identically under both unicode engines the equal and minus signs (and the vertical bar).

1.15e: Oct 22, 2012. I add the necessary things to also subdue the `\mathbf`, `\mathit`, `\mathsf` and `\mathtt` macros (previous version only took care of the symbol alphabets `\mathnormal` and `\mathrm`.) [update: 1.15f does that in a completely different and much simpler way] Notice that the package defines a `\mathnormalbold` macro, but it will not be subdued in the normal and bold math versions.

1.15f: Oct 23, 2012. The previous version of the code queried the math family of a, respectively 1, to guess and then extract the fonts to be reassigned to `mtletterfont` and `mtoperatorfont` (which is done at the end of this `.sty` file). The present code simply directly uses letters and operators (so `mathastext` could not subdue itself... if it was somehow cloned), but obtains indeed the corresponding font specifications in normal and bold in a cleaner manner. But it is so much shorter (and avoids the `LuaATeX` problem with `\luatexUmathcode`). Anyhow, for example the `euler` package puts the digits in the letters math family! so the previous method was also error prone. In fact there is no way to do this subdued mechanism on the basis of the legacy code of `mathastext`. The only way is to rewrite entirely the package to query all mathcodes of things it changes in order to be able to revert these changes (and one would have to do even more hacking for `\mathversion{normal}` and not only `\MTversion{normal}` to work).

1.15f: and also I take this opportunity to do the subdued math alphabets things in a much much easier way, see below.

1.3s 2018/08/21: I have half-forgotten the reasons for modifying the font encoding to current `\encodingdefault`, but at any rate this should not be done in a `fontspec` context, encoding default being (now) TU it is very unlikely modifying from TU or to TU from something else will do any good. I add workaround here for case of `fontspec` being detected via the `\encodingdefault` setting.

1.3t 2018/08/22: the 1.3s fix erroneously removed the OT1->T1 replacement in TU context.

1.3u: the whole thing will only get executed At Begin Document.

I realize extremely late (2023/12/28) I never said explicitly anywhere it seems in the code comments that the `frenchmath` option effect is *not* subdued: the uppercase Latin letters `\mathcode's` are not changed back to their defaults at start of a subdued document or when going to the subdued normal math version! Time to do so before the package enters resolutely dormant maintenance status soon... and I end up really forgetting anything and having wrong expectations on what is the behavior of the package.

```

2625 \ifmst@subdued
2626 \AtBeginDocument{%
2627   \def\mst@reserved#1\getanddefine@fonts\symletters#2#3\@nil{%
2628     \def\mst@normalmv@letter{#2}}%
2629   \expandafter\mst@reserved\mv@normal\@nil
2630   \def\mst@reserved#1\getanddefine@fonts\symletters#2#3\@nil{%
2631     \def\mst@boldmv@letter{#2}}%
2632   \expandafter\mst@reserved\mv@bold\@nil
2633   \def\mst@reserved#1\getanddefine@fonts\symoperators#2#3\@nil{%
2634     \def\mst@normalmv@operator{#2}}%
2635   \expandafter\mst@reserved\mv@normal\@nil
2636   \def\mst@reserved#1\getanddefine@fonts\symoperators#2#3\@nil{%
2637     \def\mst@boldmv@operator{#2}}%
2638   \expandafter\mst@reserved\mv@bold\@nil
2639   \edef\mst@tmp@enc{\mst@encoding@normal}%

```

```

2640 \def\mst@reserved#1/#2/#3/#4/{\gdef\mst@debut{#1}\gdef\mst@reste{#2/#3/#4}}%
2641 \begingroup\escapechar\m@ne
2642 \xdef\mst@funnyoti{\expandafter\string\csname OT1\endcsname}%
2643 \expandafter\expandafter\expandafter
2644 \mst@reserved\expandafter\string\mst@normalmv@operator/%
2645 \endgroup
2646 \ifx\mst@debut\mst@funnyoti\ifx\mst@tmp@enc\mst@oti\def\mst@tmp@enc{T1}\fi\fi
2647 \edef\mst@normalmv@operator{\expandafter\noexpand\csname
2648 \if1\mst@OneifUniEnc
2649 \ifx\mst@debut\mst@funnyoti T1\else\mst@debut\fi
2650 \else
2651 \mst@tmp@enc
2652 \fi/\mst@reste\endcsname}%
2653 \edef\mst@tmp@enc{\mst@encoding@bold}%
2654 \begingroup\escapechar\m@ne
2655 \expandafter\expandafter\expandafter
2656 \mst@reserved\expandafter\string\mst@boldmv@operator/%
2657 \endgroup
2658 \ifx\mst@debut\mst@funnyoti\ifx\mst@tmp@enc\mst@oti\def\mst@tmp@enc{T1}\fi\fi
2659 \edef\mst@boldmv@operator{\expandafter\noexpand\csname
2660 \if1\mst@OneifUniEnc
2661 \ifx\mst@debut\mst@funnyoti T1\else\mst@debut\fi
2662 \else
2663 \mst@tmp@enc
2664 \fi/\mst@reste\endcsname}%
2665 \expandafter\SetSymbolFont@ \expandafter\mv@normal\mst@normalmv@letter\symmtletterfont
2666 \expandafter\SetSymbolFont@ \expandafter\mv@bold\mst@boldmv@letter\symmtletterfont
2667 \expandafter\SetSymbolFont@ \expandafter\mv@normal\mst@normalmv@operator\symmtoperatorfont
2668 \expandafter\SetSymbolFont@ \expandafter\mv@bold\mst@boldmv@operator\symmtoperatorfont
2669 \immediate\write\m@ne{%
2670 \PackageInfo{mathastext}{...entering subdued mode...\MessageBreak ...done}}%
2671 \immediate\write\m@ne{%
2672 }% \AtBeginDocument
2673 \fi % \ifmst@subdued

```

Preamble-only... “Only preamble” restrictions. I was way too much obedient back in 2011, particularly taking into account how much of a pain it has been and still is that things such as `\DeclareMathSymbol` or `\DeclareMathAccent` are preamble-only. But keeping this for time being, however not using `\@onlypreamble` which breaks one’s heart when tracing to see how much place it takes, so we do it in one go.

```

2674 \expandafter \gdef \expandafter \@preamblecmds \expandafter {\@preamblecmds
2675 \do\MTitgreek
2676 \do\MTupgreek
2677 \do\MTitGreek
2678 \do\MTitGreeK
2679 \do\Mathastextitgreek
2680 \do\Mathastextupgreek
2681 \do\MathastextitGreeK
2682 \do\MathastextitGreeK

```

```

2683 \do\MTgreekfont
2684 \do\Mathastextgreekfont
2685 \do\MTgreekupdefault
2686 \do\MTgreekitdefault
2687 \do\MTDeclareVersion
2688 \do\MathastextDeclareVersion
2689 \do\MTWillUse
2690 \do\MathastextWillUse
2691 \do\Mathastextwilluse
2692 \do\Mathastext
2693 \do\mathastext
2694 }
2695 \immediate\write\m@ne{
2696 \PackageInfo{mathastext}{Loading is complete. \space You can now use \string\Mathastext
2697 \space to\MessageBreak
2698 modify the normal and bold math versions. \space
2699 Use it\MessageBreak
2700 with optional argument or use \string\MTDeclareVersion\space
2701 to\MessageBreak
2702 declare additional math versions\@gobble}
2703 \endinput

```