

# 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.

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# 1 Installation instructions and recent changes

## 1.1 Installation

If you did not download this file from the internet chances are that `mathastext` is already in your  $\text{\TeX}$  installation and that you are reading this documentation after having done something like `texdoc mathastext`. Still, read the following which explains how to produce some test files illustrating package features.

Download from the internet (from CTAN or from the package home page) `mathastext.dtx` (or copy the file already installed on your system, assuming it is up-to-date), put it in a temporary repertory and do `latex` (or `pdflatex`) on it. The compilation will not succeed if your installation is missing package `etoc` but even then it will have generated the package file `mathastext.sty`. You may then (if installing manually the package) move this up-to-date `mathastext.sty` to the appropriate location within your  $\text{\TeX}$  installation (*i.e* to a repertory with name `mathastext` inside a repertory `latex` inside a repertory `tex` inside ...).

This `latex` run generated also a number of test files. They are provided to illustrate some features of the package. You can then run `latex`, `pdflatex`, `lualatex` or `xelatex` on them. Some test files are to be used only with  $\text{\XeTeX}$  and  $\text{\LuaTeX}$ , as they use Unicode fonts.

## 1.2 Recent changes

The current version is 1.2e. Additions were made: in this user manual to the section 2.10 describing the compatibility issues, and to the test files illustrating various package features. Important changes to the source code were done to fix compatibility problems with active characters dating back to the 1.2 version. Also, an oversight in the implementation of the italic correction features from 1.2b was corrected.

Version 1.2d introduced the `asterisk` option (strangely the command `\MTlowerast` was not the one described in the manual; this has been corrected) and solved a problem of compatibility with `amsmath`.

The main new features in versions 1.2 and 1.2b were the extended scope of the math alphabets and, respectively, added italic corrections in math mode. Both use mathematically active characters and some (thorny) technical problems related to globally active characters were finally solved to (almost) complete satisfaction (let's hope) only in the current 1.2e version. These issues are commented upon in the compatibility section, in the test file `testmathastextalphabets.tex` and in the commented source code.

Earlier, version 1.15 introduced the concept of the *subdued* math versions.

## 2 What `mathastext` does

### 2.1 Examples

`mathastext`'s basic aim is to have the same font for text and mathematics. With hundreds of free text fonts packaged for L<sup>A</sup>T<sub>E</sub>X 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.

Here is an example with Latin Modern typewriter proportional:

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

Notice that the Latin (and Greek letters) are in upright shape. But perhaps we insist on obeying the standardized habits:

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

This was typeset using the Times font (available in any  $\text{\TeX}$  distribution). Let us now 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.

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:

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

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

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 ...):

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

Notice that the Greek letters also changed according to the *math version*: **mathastext** has indeed some (limited) capabilities to this effect, with its **LGRgreek** option. This document uses the LGR encoded fonts **cmmt**, **cmss**, and **txr**, which are part of standard  $\text{\TeX}$  distributions.<sup>1</sup>

## 2.2 Overview

### 2.2.1 Basic use

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.

<sup>1</sup>The first two are available (with no need to load explicitly any package in the document) via the combination **cbfonts** (**cbgreek-complete**) & **babel**, and the LGR encoded **txr** font (again no package loading is necessary) is part of the files of the **txfonstb** package.

As soon as one tries out other fonts for text than the Computer Modern ones one realizes how extremely “thin” are the default T<sub>E</sub>X fonts for mathematics: they definitely do not fit well visually with the majority of text fonts. With **mathastext** one can get one’s (simple... or not) mathematics typeset in a manner more compatible with the text, without having to look for an especially designed font.

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

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

All letters, digits, and punctuation signs inside math mode will then be typeset in Times.<sup>2</sup> The exact list of characters concerned by **mathastext** is a subset of the basic ASCII set:

abcdefghijklmnopqrstuvwxyz  
 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
 0123456789  
 !?\*,.,;+-=()[]/ # \$ % & < > | { } and \

As one can see, this is a very limited list! some possibilities are offered by **mathastext** for Greek letters and will be described later.

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

- the derivative sign ‘ is left to its default as the text font glyph ‘ is not, as a rule, a satisfying alternative.<sup>3</sup>
- for the minus sign **mathastext** uses the endash character –, if available, and not the hyphen character -,
- the option **asterisk** is necessary for **mathastext** to replace the binary math operator \* (and the equivalent control sequence `\ast`) with a version which uses the text asterisk \* suitably lowered<sup>4</sup> (and with the correct spaces around it as binary operator). The reason for making it optional is that after this `$R^*$` or `$R^{\ast}` do not work and have to be written `$R^{\*}` or `$R^{\ast}`.

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.

<sup>2</sup>let’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.

<sup>3</sup>v1.2 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  $f'$ .

<sup>4</sup>the amount of lowering can be customized.

### 2.2.2 sans 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}
```

### 2.2.3 always load `mathastext` last

As said already none of the “large” math symbols is 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. The more common symbols can be taken from the Symbol font (option `symbolmisc`, or `symbolmax` to get also the Greek letters from Symbol).

### 2.2.4 option `LGRgreek`

There is the issue of Greek letters. Sometimes the text font has Greek glyphs, in LGR encoding (this will be mentioned in the documentation of the font package). Then option `LGRgreek` tells `mathastext` to pick up these Greek letters. And it is possible to specify whether the Greek letters should be upright, or “italic”.<sup>5</sup> Of course it is always possible to leave the responsibility to set up Greek letters in math mode to packages loaded previously to `mathastext`.

### 2.2.5 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 `<>|{}` and `\` glyphs. If `mathastext` detects OT1 as the default encoding it will leave these characters to their defaults from the math fonts.<sup>6</sup>

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.

<sup>5</sup>a more detailed discussion comes next. Note that 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`) package.

<sup>6</sup>the `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.

## 2.3 Main options

### 2.3.1 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 numerous<sup>7</sup> questions<sup>8</sup> 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 have the Latin letters in math mode in italic shape.<sup>9</sup> There is also an option `frenchmath` to make the uppercase letters nevertheless upright, because this is the way of traditional French mathematical typography.<sup>10</sup>

### 2.3.2 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`.

### 2.3.3 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.

The previous description is in fact a bit optimistic: `mathastext` was not written initially in order to allow its action to be completely cancelled, and achieving this would require a complete rewrite of large portions of the code. In order to really have the displayed math (almost) as if `mathastext` had not been loaded, one must at a minimum also use the option `defaultmathsizes`. This does not quite suffice, because, for example, the colon, the dot, and the minus sign belong in the default L<sup>A</sup>T<sub>E</sub>X math mode set-up to three distinct fonts whereas `mathastext` will pick (even subdued) the three of them in the same font, and although it will make a reasonable

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<sup>7</sup>this means “more than one.”

<sup>8</sup>I thank in particular Tariq PERWEZ and Kevin KLEMENT for their kind remarks (chronological order).

<sup>9</sup>more precisely stated, the value of `\itdefault` is used.

<sup>10</sup>more precisely stated, the value of `\shapedefault` is used.

choice of this font, this is not a return to the previously prevailing situation. And then arbitrary packages could have done arbitrary things... so to be on the safe side one needs the `basic` option which limits the mathastextification to letters and digits (and should also be accompanied by `defaultimath` which prevents redefinition of the `\imath` macro, and `nohbar` which prevents redefinition of the `\hbar` macro...). And even then, in some circumstances, this will still not suffice; for example the *euler* package puts the digits in the same font as the Latin letters in math mode, but the subdued `mathastext` will pick them up in the same font as used in operator names, and in the case of the *euler* package, this is the main document font. So, even subdued, `mathastext` still kicks. But, as I think is illustrated by the examples given at the start of this document, the `subdued` option has its utility, and works reasonably well.

Furthermore, the `subdued` action does *not* extinguish package options `euler-greek`, `symbolgreek` or `symbol`. But `LGRgreek` is receptive to it.

## 2.4 Math versions

L<sup>A</sup>T<sub>E</sub>X has the concept of *math versions*, but most font packages do not define any such version beyond the default normal and bold (that they possibly customize to use such or such math font). The package `unicode-math` for unicode engines fruitfully uses this concept. `mathastext` uses 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. However the other math symbols (sums, products, integrals, logical signs, etc...) will be the same throughout the document as it is not in `mathastext` power to modify them. There are some possibilities to use different sets of fonts for the Greek letters, though.

The present document illustrated the use of various fonts, here is its preamble (slightly stripped-down):

```
\usepackage{lmodern}
\usepackage[T1]{fontenc}
\usepackage[subdued,italic,defaultmathsizes]{mathastext}
\MTDeclareVersion[n]{lmvtt}{T1}{lmvtt}{m}{n}
\usepackage{newcent}
\Mathastext[newcent]
\usepackage{times}
\Mathastext[times]
\usepackage[scaled]{helvet}
\renewcommand\familydefault\sfdefault
\Mathastext[helvet]
\begin{document}\MTversion{normal}
```

Let us examine this code: it uses once the command `\MTDeclareVersion` and three times the command `\Mathastext`, thus defining four *math versions*<sup>11</sup>: `lmvtt`,

<sup>11</sup>math versions are discussed in the document `fntguide.pdf` from your T<sub>E</sub>X distribution.



`newcent`, `times`, and `helvet`. The names can be taken arbitrarily (they only need to be suitable arguments to the L<sup>A</sup>T<sub>E</sub>X `\DeclareMathVersion` command which is invoked internally, so no spaces in the names). Two additional math versions pre-exist: the `normal` and `bold`, which, because there was the `subdued` option, were left untouched by `mathastext`.

Once these `math` versions are defined, `\Mathastextversion{name_of_version}`, or equivalently `\MTversion{name_of_version}` in the body of the document enacts the font switches. As is usual with L<sup>A</sup>T<sub>E</sub>X one can limit the scope to the inside of a group, or also switch back to the main set-up through issuing `\Mathastextversion{normal}`.

When `\Mathastext` is used in the preamble, it records the current font defaults and (except for the `normal` and `bold` versions under the `subdued` regime) sets up the math font to be used in that version to be the text font as found in `\familydefault`. But it is still possible for a `mathastext`-declared math version to have distinct fonts for text and math:

1. in the body of the T<sub>E</sub>X source, an optional argument (the name of a `mathastext`-declared math version) to `\MTversion` is allowed, and for example we used in the source of this document `\MTversion[newcent]{helvet}` meaning “New Century Schoolbook for the text and Helvetica for the math.”
2. there are preamble-only commands `\MTencoding`, `\MTfamily`, `\MTseries`, `\MTshape`, `\MTlettershape` which tell `mathastext` what to do (for math *only*) in each math version declared *afterwards*, independently of the text fonts.

In the body of the document the L<sup>A</sup>T<sub>E</sub>X command `\mathversion{<version_name>}` will change only the fonts used in math mode. It is recommended to use instead the package command `\mathastextversion` (or its synonyms `\MTversion`, `\Mathastextversion`, `\MTVersion`), with a mandatory argument `{<version_name>}`. It

- checks in case the `subdued` option was specified whether the asked-for math version is `<normal>` or `<bold>`, and adapts the following to that case,
- sets the font which will be used in math mode for letters (including math operator names), digits, punctuations and other ascii symbols,
- sets the font of the document text (if another version name is additionally passed as optional argument, it uses instead the corresponding font for text),
- resets the `\(family,rm,sf,tt)defaults` to their values as registered at the time of definition of the version,
- (see section 2.7) resets the user-defined extra spaces after the symbols  $\exists$ ,  $\forall$  and before the derivative  $'$  to the values as decided in the preamble on a *per version* basis,

- (see section 2.6) checks if the used font is upright and then activates the automatic insertion of italic corrections after each letter in math mode,
- (see section 2.5) makes the math operator names as well as the ‘easy’ non letter characters (and the asterisk) obey the math alphabets,
- does some additional set up for Greek letters when the `LGRgreek` option was used.

The scope is limited to the current L<sup>A</sup>T<sub>E</sub>X 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.<sup>12</sup> But one can use instead `\renewcommand{\rmdefault}{epigrafica}`,<sup>13</sup> 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}`.

## 2.5 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 T<sub>E</sub>X, not be compatible with the automatically inserted spaces around them.

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

1. the pre-declared or user-declared (using the `amsmath \DeclareMathOperator` or equivalent) operator names obey the math alphabet commands,<sup>14</sup>

<sup>12</sup>may typically give a ‘too many math alphabets’ error message.

<sup>13</sup>sometimes one needs to look in the `.sty` file of the font package to figure out the font name (it is rarely as `epigrafica`, the same as the package name), and, if one does not know the arcanae of finding `.fd` files in one’s T<sub>E</sub>X 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.

<sup>14</sup>contrarily to the next feature, this one is not likely to create incompatibilities with other packages, so it is activated by default.

2. and, *optionally*, all non alphabetical characters<sup>15</sup> treated by `mathastext`, *i.e.*, if not disabled by options, `!?, :; + - = ( ) [ ] < > { }`, the asterisk `*`, and `./|\#\$%&`<sup>16</sup> will also obey the math alphabet commands (when not used as delimiters). The important thing is that the spaces added by  $\text{T}_{\text{E}}\text{X}$  before and after are not modified.

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

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

with the traditional default behavior:

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

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 `\mathbf{R}^*\$` is no valid input anymore and should be replaced by `\mathbf{R}^{\ast}\$`. The remaining ‘difficult’ cases create similar constraints, which will be commented more upon next. The relevant commands are

`\MTmathoperatorsdonotobeymathxx`  
`\MTnonlettersdonotobeymathxx`  
`\MTeasyonlettersdonotobeymathxx`

for deactivation and

`\MTmathoperatorsobeymathxx`  
`\MTnonlettersobeymathxx`  
`\MTeasyonlettersobeymathxx`

for activation.<sup>17 18</sup>

<sup>15</sup>of course some of them are input preceded by a backslash, and the backslash itself is input as `\backslash`.

<sup>16</sup>`#\$%&` 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  $\text{T}_{\text{E}}\text{X}$  around them, and the procedure is then not a devilish one, this is why it is made the default for these characters which are listed apart. The math symbols `\mid` (which is `|` with type `\mathrel`) and `\setminus` (`\` with type `\mathbin`) are counted among the ‘difficult’ cases, not the ‘easy non-letters’.

<sup>17</sup>these commands are to be used outside of math mode. Their scope is limited to the current  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  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.

<sup>18</sup>when in subdued mode, the math alphabets are the default ones, not the ones modified by `mathastext` to use the document text fonts. As a result, matters of font encodings may then give unexpected results, for example for `-`. On the present document page we switched to a math version to escape from the subdued mode and avoid the problem with `\mathbf{-}` giving in the normal (subdued) math version `˘`, when ‘non-letters’ are declared to obey math alphabets.

**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:  $x^?$ ,  $R^+$  or  $\mathopen{<A\mathclose{>}}$  must now be coded as  $x^{\{?\}}$ ,  $R^{\{+\}}$  and  $\mathopen{\{<A\mathclose{\}>}}$  (the rule is to do as if `?`, `+`, `<` or `>` 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 brace control sequences `\{` and `\}` have their own (supplementary) switch, which is (even) less activated by default. The reason is that after `\MTexplicitbracesobeymathxx`, they regrettably can not be used anymore as delimiters: `\big\{` or `\big\}` cease to function and must be replaced by `\big\lbrace` and `\big\rbrace`. But we can now enjoy  $\{a, a > b\}$ ,  $\{\mathbf{a}, \mathbf{a} > \mathbf{b}\}$ ,  $\{a, a > b\}$ , or even  $\{a, a > b\}$ .<sup>19</sup>

There is no such restriction with `(`, `)` or the brackets `[`, `]`. When used as delimiters though, they will become again unreactive to the math alphabets: the same applies to `<` and `>` or to any of the other characters such as the slashes `/`, `\`, when they are used as delimiters. This is a rather obvious restriction except possibly for the smallest size delimiters (the so-called ‘small variants’), as all other sizes will be anyway absent from the text fonts. Even the small variants may not be really available in the text fonts: for example the standard `<` used as a delimiter is in  $\LaTeX$  a `\langle`:  $\langle$ . With standard  $\LaTeX$   $\left< x\right>$  gives  $\langle x \rangle$ .

Actually, `mathastext` does try to pick up most of the ‘small variants’ in the text font:  $\left< x\right>$  gives  $\langle x \rangle$  (but  $\left< \mathbf{b}\right>$  gives  $\langle \mathbf{b} \rangle$ .) If you don’t like that use the option `nosmalldelims` (it is indeed perhaps a bit strange to have  $\langle x \rangle$  next to  $\langle X \rangle$ , again before blaming me, consider using `nosmalldelims`.) At any rate, whether ‘small’ or not, delimiters are not under the extended law of math alphabets, this is a general rule of the way `mathastext` manages these things.

Examples:  $\mathbf{\left< a, b \right>}$  gives  $\langle \mathbf{a}, \mathbf{b} \rangle$ .  $\mathbf{\left< \left< a, b \right> \right>}$  gives  $\langle \mathbf{a}, \mathbf{b} \rangle$ .  $\mathbf{\left< \mathopen{\{< a, b \mathclose{\}>}} \right>}$  gives  $\langle \mathbf{a}, \mathbf{b} \rangle$ . The  $\LaTeX$  standard behavior for  $\mathbf{\left< \mathopen{\{< a, b \mathclose{\}>}} \right>}$  is  $\langle \mathbf{a}, \mathbf{b} \rangle$ .

<sup>19</sup>this last example uses the `\mathnormalbold` additional alphabet defined by `mathastext`.

## 2.6 Italic corrections

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 T<sub>E</sub>X 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 boxes<sup>20</sup> for the letter *f* in the math italic font to the one from the text italic font:  $\mathit{f}$  vs.  $\textit{f}$ .

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:<sup>21</sup>  $\textit{f(x)}$  (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 T<sub>E</sub>X 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*.<sup>22</sup> With the italic corrections included our bounding boxes are indeed more alike:  $\mathit{f}$  vs.  $\textit{f}$ .

Without the italic corrections<sup>23</sup> it is  $\mathit{f}$  vs.  $\textit{f}$ . I said that  $\mathbf{f}$  included the italic correction automatically, but if we tell T<sub>E</sub>X 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}{lmm}{m}{it}` and confirms that italic corrections have been used for the math italic in math.

Turning to the T<sub>E</sub>Xbook (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 T<sub>E</sub>X 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

<sup>20</sup>let's be honest, we are lying here about what exactly the first of these is bounding; this is explained later!

<sup>21</sup>we used simply `\mathit{f(x)}`.

<sup>22</sup>these values are for the Latin Modern fonts of course.

<sup>23</sup>here we give correctly the bounding box for the math italic *f*... without its italic correction!

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  $\mathbf{f(x)}$ . Another clever thing done by  $\mathrm{T\!E\!X}$  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  $\mathit{f}^j$ ... where the latter was coded with  $\mathit{\hbox{\itshape f}}^j$ . The inputs  $\mathit{\hbox{\itshape f}}^j$  and  $\mathit{f}^j$  give almost identical results:  $\mathit{f}^j$  vs.  $\mathit{f}^j$ . 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  $\mathrm{T\!E\!X}$ 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 the standard math italics  $f_i^j$ . In the next paragraphs we use  $f_i^j$  for more accurate comparison of the positioning of the sub- and superscript.

If we try something like this:  $\mathit{f_i^j}$  we obtain  $f_i^j$ . Our overlapping game with  $\mathit{f_i^j}$  gives  $f_i^j$ . We discover that the effect of the explicit italic correction has mainly been to translate the subscript horizontally to be positioned exactly below the superscript!<sup>24</sup> 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  $\mathrm{T\!E\!X}$  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  $f_i^j$  is a bit better-looking than the true math italic  $f_i^j$  . . .

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  $\mathrm{T\!E\!X}$  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  $\mathrm{T\!E\!X}$  has been told to use it. Let's try Latin Modern Upright for letters in math:  $\mathit{f_i^j}$  now gives<sup>25</sup>  $f_i^j$ . We see the italic correction in action for the positioning of the superscript! Compare with  $\mathit{\hbox{\itshape f}}_i^j$ :  $f_i^j$ . Overlapping with  $\mathit{f_i^j}$  gives  $f_i^j$  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  $\mathit{f_i^j}$ : this gives  $f_i^j$  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,  $\mathit{f_i^j}$  gives  $f_i^j$ .

<sup>24</sup>there are also some tiny vertical displacements of the sub- and superscripts.

<sup>25</sup>we just use  $\mathit{f_i^j}$ .

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  $\mathrm{ff}$ ,  $\mathit{ff}$ ,  $\mathbf{ff}$ ,  $\mathsf{ff}$  all give ligatures  $\mathit{ff}$ ,  $\mathit{ff}$ ,  $\mathbf{ff}$ , and  $\mathsf{ff}$  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.<sup>26</sup>

These italic corrections are cancelled inside the arguments to the math alphabet commands others than `\mathnormal`, to allow the formation of ligatures as is expected in the standard default T<sub>E</sub>X font set-up in math.

The feature-implementing commands `\MTicinmath`, `\MTnoicinmath`, `\MTical-soinmathxx` are described in section 3.3.2.

**Note:** from brief testing on 2012/12/28, X<sub>Y</sub>T<sub>E</sub>X seems not to create fake italic corrections for OpenType fonts. Hence the T<sub>E</sub>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<sub>Y</sub>T<sub>E</sub>X engine. On the other hand LuaL<sub>A</sub>T<sub>E</sub>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 T<sub>E</sub>X installation and compare the output of both engines:

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

Comment out the `fontspec` line and use pdfL<sub>A</sub>T<sub>E</sub>X. All three outputs are different on my T<sub>E</sub>X installation. X<sub>Y</sub>T<sub>E</sub>X does not have the italic corrections. LuaL<sub>A</sub>T<sub>E</sub>X does, but only for the italic font. pdfL<sub>A</sub>T<sub>E</sub>X has them for both the italic and the upright font.

<sup>26</sup>the situation is rather ironical! by the way, the warnings in section 2.5 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 letter characters a–z, A–Z, expand to composite objects, something which could surprise other packages. The macro `\MTnoicinmath` cancels the mechanism.



## 2.7 Additional whitespaces

`\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.<sup>27</sup>

- 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 that 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  $f'$ .<sup>28</sup>

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. Or, the commands may be used directly in the document.

Also, when the `subdued` option has been used, the normal and bold math versions have by default zero length skips (no preamble setting will change that). Nevertheless it is possible to use also then the commands in the body of the document.

## 2.8 Greek letters

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 is for fonts which additionally to Latin letters also provide Greek letters in LGR encoding. Here is a list from a 2012 standard T<sub>E</sub>X 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

<sup>27</sup>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.

<sup>28</sup>the derivative glyph from the `txfonts` math symbols adapts itself better to an upright letter, no skip seems to be needed then.



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:

```
% 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**.

**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** 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.

The **subdued** option interacts with the options for Greek letters in the following way:

1. in its presence, the **LGRgreek** and **LGRgreeks** options cease to have any effect in the normal and bold math versions,
2. **selfGreek(s)**, **eulergreek** and **symbolgreek** act normally, they are not affected by the presence or absence of **subdued**.

### 2.8.1 Shape of Greek letters

Classic T<sub>E</sub>X 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 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),

`itgreek, upgreek`: both lowercase and uppercase are in the `\itdefault`, respectively the `\updefault` shape (at the time of loading the package or at the time of a subsequent call to `\Mathastext` or `\MathastextWillUse`),

`itGreek, upGreek`: same as above, but only for the uppercase letters.

So, the default gives the classic T<sub>E</sub>X behavior when option `italic` was passed. Each call to `\Mathastext` (or `\MathastextWillUse`) macros (described in a later section) reinitializes the computation of the shapes.

As mentioned already the package allows to define various “math versions”. In the case of `eulergreek` or `symbolgreek` they apply to all these versions. In the case of the options `LGRgrees` or `selfGreeks` (notice the additional “s”), each math version is assumed to have its text font available in LGR (or OT1 encoding) and also the shapes will be local to the math version.

Finally version 1.15c of `mathastext` introduces new preamble-only commands to change the shapes, and even the font, used for Greek letters, in case of package options `LGRgreek/selfGreek`. They are `\MTitgreek`, `\MTupgreek`, `\MTitGreek`, `\MTupGreek`: these are used like the options and change only the shapes for the math versions which will be declared *next* in the preamble; and `\MTgreekfont{name_of_font}` will tell the *next* math versions to use that font family. To use this command you need to know the (little) 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...

## 2.9 Unicode engines

`mathastext` has been made minimally unicode-aware and can be used with X<sub>Y</sub>T<sub>E</sub>X or Lua<sub>Y</sub>T<sub>E</sub>X, but the user is strongly advised to look first at the `mathspec` package,

which is a far more powerful package designed for unicode (only for X<sub>Y</sub>TeX), and to `unicode-math` (to use OpenType math fonts).

Of course `mathastext` is extremely far from being able to define a math font, as it applies basically only to a subset of the 32-127 ascii range, and in particular it does not know how to use a given Unicode font simultaneously for Latin and Greek letters. Again the user is strongly advised to look at `mathspec` and `unicode-math`.

When using `mathastext` with either X<sub>Y</sub>TeX or Lua<sub>Y</sub>TeX it is recommended to use the `fontspec` package. Else, some of the encoding dependent things done by `mathastext` like using the en-dash character to get a minus sign in math mode will not be put in place. Furthermore, it is *necessary* to load `fontspec` 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`.

The `amsmath` package, if used, *must* be loaded *prior* to `mathastext`.

A little piece of the functionality of `mathastext` is less fully realized under the Lua<sub>Y</sub>TeX engine than it is with X<sub>Y</sub>TeX. This is a temporary situation as the needed feature of Lua<sub>Y</sub>TeX has been implemented in its latest development release. I will update `mathastext` when these binaries will have reached the distribution stage.

I already mentioned in the section 2.6 the fact that the italic corrections were not available for OpenType fonts under the X<sub>Y</sub>TeX engine and only partially available for the Lua<sub>Y</sub>TeX 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 `pdfetex` engine (the OpenType fonts not being usable with the latter engine, this is not a criterion of choice anyhow).

To specify math versions using unicode fonts, use the `fontspec \setmainfont` command (with arbitrary optional features). This command can be issued before loading `mathastext`, or after and then will be followed by a `\Mathastext` command with the name of the version in square brackets.

It is possible to mix unicode fonts and classical T<sub>E</sub>X fonts. But this is definitely *not* recommended as `mathastext` decides once and for all what is the font slot of things such as the text endash (used for the minus sign) and this is encoding dependent. So it is best to have either only unicode fonts, or only old-fashioned T<sub>E</sub>X fonts in a fixed encoding (T1, or LY1 for example).

The package was not extensively tested with unicode engines. I include here two examples which compiled successfully with X<sub>Y</sub>TeX and Lua<sub>Y</sub>TeX, the first one on a Linux machine, the second one on a Mac OS X machine.<sup>29</sup>

---

<sup>29</sup>running `latex` (in a temporary repertory) on a copy of the file `mathastext.dtx` will extract extended versions of these examples as test files.

```

\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]
\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$\ }
\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}

```

The test files which will be produced by running `latex` on `mathastext.dtx` are more extent.

## 2.10 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.

In case of a ‘too many math alphabets’ message try the `defaultalphabets` option or one of its `defaultnormal`, `defaulttt`, etc...sub-options.

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` feature<sup>30</sup> 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*.<sup>31</sup>

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

<sup>30</sup>italic correction insertion for the latin letters, receptivity to the math alphabet action for the other characters.

<sup>31</sup>only the characters  `; , : ! ? + - = < > ( ) [ ] *`  mentioned in section 2.5 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 ...

```

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

```

**DO NOT DO THIS AT HOME**: it creates an infinite loop. This is due to the fact that the colon is simultaneously active (this is made by `babel` 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 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 `testmathastextalphabets.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 2.5, with the “non letters obey math alphabets” mechanism, 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.

Doing (after the `\begin{document}`) `\everymath={}` and `\everydisplay={}` (preemptively) annihilates all of the `mathastext` (evil) doing with math active characters but it annihilates also everything else some other package might have put in there, so it is much better, in case the need arises to preemptively cancel the action of `mathastext`, to use the package macros `\MTmathoperatorsdonotobeymathxx`, `\MTnonlettersdonotobeymathxx` (this is default), `\MTnoicinmath`,

and `\MTnormalprime` (which cancels<sup>32</sup> the redefinition done by `mathastext` of the action of the right quote `'` in math mode).

An exception is with the modifications to  $\exists$  and  $\forall$  which are done by the package in the preamble; the old definitions can be saved before to be reestablished after loading the package. Just using `\MTexistsskip{0mu}` and `\MTforallskip{0mu}` should be sufficient, except if it is important that the `\exists` and `\forall` control sequences always expand to only one token each.

## 3 Package options and commands

### 3.1 Summary of main options

**`italic`, `frenchmath`**: italic letters in math, upright uppercase if `frenchmath`.

**`subdued`**: acts in a subdued way. The L<sup>A</sup>T<sub>E</sub>X normal and bold math versions are left (quasi) unchanged. With version 1.15e of the package this statement applies also to the math alphabets `\mathbf`, `\mathit`, `\mathsf`, and `\mathtt` (and not only to `\mathnormal` and `\mathrm` as in previous versions.)

**`LGRgreek`, `eulergreek`, `symbolgreek`**: the Greek letters will be taken, respectively from the text font itself (in LGR encoding), or from the Euler font, or from the Postscript 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 quite smaller than the one one would get without the package.

**`defaultmathsizes`**: `mathastext` sets up bigger sizes for subscripts (it also copies code from the `moresize` package to redefine `\Huge` and define `\HUGE`). Use this option to prevent it from doing so.

**`defaultalphabets`**: by default, `mathastext` redeclares the math alphabets `\mathrm`, `\mathit`, `\mathtt` etc... (but not `\mathcal` of course) to refer to the current document text fonts (at the time of loading the package and in each `mathastext` math version). Use this option to prevent it from doing so (each alphabet also has its own disabling option).

### 3.2 Miscellaneous

**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

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<sup>32</sup>no command is provided to revert it, but its scope is limited to the current environment or group.

–. 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).

**amsmath:** the behavior of the `\DeclareMathOperator` command of `amsmath` is slightly modified by `mathastext`. This command initially allows crazy things like `\DeclareMathOperator\crazy{m.ch-in'tr/u:c}` and then the `.`, `-`, `'`, `/` and `:` will be typeset in the roman font. But the font number was hardcoded in the macro and furthermore the code of `amsmath` would cause an error with Unicode engine as soon as some Unicode code is assigned to the minus character.<sup>33</sup> This specific issue will perhaps be fixed by some hypothetical future release of `amsmath`, or by other packages providing patches, but I decided for a preemptive strike. As a result the declaration above will not cause an error when `\crazy` is used with a Unicode engine, but there are now some spacings around the punctuation characters. To avoid this use (also with `LATEX`):

`\DeclareMathOperator\crazy{m{.}ch{-}in{'}tr{/}u{:}c}`

Note though that the quote `'` will be typeset as a derivative sign `'`.

**hbar:** the definition of `\hbar` inherited from default `LATEX` will 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 the bar across the `h` will come from the original default math font for letters (usually `cmmi`), and furthermore its placement on the `h` can be odd-looking. So we redefine `\hbar` to use only the text font (and this will be aware of the `italic` option). Our construction does not always give an optimal result (and its scope is limited to the `OT1`, `LY1` and `T1` encodings), so an option `nohbar` deactivates it. There is no `\hslash` provided by the package, though. The version 1.12 of the package when dealing with a Unicode font tries to get the `\hbar` directly as a glyph from the font.

**dotless i and j:** by default the package redefines `\i` and `\j` to give the dotless `i` and `j` (if it exists at all), *also in math mode*, in the text font. Will overwrite the default commands `\imath` and `\jmath`. In version 1.12 of the package this should work in all encodings, including Unicode (it is then assumed that `fontspec` has been loaded, and of course that the glyphs are indeed in the font).

**asterisk:** previous versions of `mathastext` 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

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<sup>33</sup>To the experts: the `sin`, `cos`, ... operator names are *not* defined by `amsmath` with the help of the `\DeclareMathOperator` macro, hence are not the cause of an error in `XYLATEX`/`LuaALATEX`. What `mathastext` does is to let to relax the `\newmcodes@` macro, so it is possible to save it before loading `mathastext` and re-establish later, if really really this is what you want.



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 lowering<sup>34</sup> 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’<sup>35</sup> and `$R^*$` or `$R^{\ast}` *must* be input as `$R^{*}` and `$R^{\ast}`. Furthermore, they will obey the math alphabet commands.

**X<sub>Y</sub>TeX and Lua<sup>A</sup>TeX:** for the en-dash and the dotless i and j, the package expects to detect either the EU1 encoding for XeTeX or the EU2 encoding for Lua<sup>A</sup>TeX (this will be true if `fontspec` was loaded), or one of OT1, LY1 or T1, else it will renounce and not attempt to access the en-dash or the dotless i and j glyphs. With <sup>A</sup>TeX and Pdf<sup>A</sup>TeX, there is no such limitation and all 8bit-encodings (containing these glyphs) should be ok.

**fontspec:** one more note to users of X<sub>Y</sub>TeX/Lua<sup>A</sup>TeX 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.

**math alphabets:**

- 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 `amssy` package). As it does not exist in the default <sup>A</sup>TeX math font set-up, this alphabet is *not* subjected to the subdued option action.
- The other math alphabet changing commands defined by the package are `\MathEulerBold`, `\MathEuler` and `\MathPSymbol`.

<sup>34</sup>with 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`.

<sup>35</sup>in a hopefully safe way, for example `$_{\label{eq*1}}$` is ok.

- `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf` and `\mathtt` are modified to make reference to the document text fonts (this can be disabled by suitable package options).
- version 1.2 of `mathastext` has extended the scope of the math alphabets to apply to non-alphabetical characters and to operator names. This respects the automatic white spaces added by T<sub>E</sub>X around math symbols.

**math accents:** an option `mathaccents` is provided to pick up the accents in math mode from the text font, but the package knows only T1, LY1 or OT1-compatible encodings.

Regarding the encoding-dependent glyphs: the en-dash, the dotless i and j, the math accents, the hbar, are encoding dependent and the relevant decisions are made once by `mathastext` at the time it is loaded and are applied to all declared math versions. So you can use math versions with different encodings but, regarding these characters only those with the same encoding as the normal math version will display them correctly.

It is thus recommended that all declared `mathastext` math versions use the same font encoding.

## 3.3 Commands

### 3.3.1 Preamble-only commands

These commands mainly facilitate the definition of math versions, in a `mathastext` extended sense. It is thus not necessary to use them to activate the package basic functionalities, loading `mathastext` is enough.

- `\Mathastext` (or `\mathastext`): reinitializes `mathastext` according to the current defaults of encoding, family, series and shape.<sup>36</sup>
  - It can also be preceded optionally by one or more of<sup>37</sup> `\MTencoding{<enc>}`, `\MTfamily{<fam>}`, `\MTseries{<ser>}`, `\MTshape{<sh>}`, and, new with version 1.1, `\MTlettershape{<sh>}`. For example valid values 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.

<sup>36</sup>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*.

<sup>37</sup>these commands exist also with long names: `\Mathastextencoding`, etc. . . The same applies to the other commands mentioned in this section.

- **math versions:** starting with version 1.12 `\Mathastext` accepts an optional argument `[\langle version\_name \rangle]`, which will serve as a name to designate the corresponding math version (without optional argument `\Mathastext` redefines the default normal and bold versions.) This argument, being optional, must be enclosed within square brackets.<sup>38</sup>
- `\MTWillUse[\langle ltsh \rangle]{\langle enc \rangle}{\langle fam \rangle}{\langle ser \rangle}{\langle sh \rangle}`: 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 `\langle ltsh \rangle` specifies a shape for the letters, for example `\itdefault`, or directly `\langle it \rangle` or `\langle sc \rangle`.
- `\MTDeclareVersion[\langle ltsh \rangle]{\langle name \rangle}{\langle enc \rangle}{\langle fam \rangle}{\langle ser \rangle}{\langle sh \rangle}`: declares that the document will have access to the font with the specified characteristics, under the math version name `\langle name \rangle`. 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).<sup>39</sup> When the optional argument is absent, and `mathastext` was loaded with the `italic` option, then the default letter shape will be `it`,<sup>40</sup> else letters will have the same shape as used for digits and operator-names.
- `\MTboldvariant{\langle var \rangle}`: 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{\langle factor \rangle}`: scales the Euler font by `\langle factor \rangle`.
- `\MTSymbolScale{\langle factor \rangle}`: scales the Symbol font by `\langle factor \rangle`.
- `\MTitgreek`, `\MTupgreek`, `\MTitGreek`, `\MTupGreek`: optional commands, active only in the case of the `LGRgreek` option, to decide the shape of the Greek letters in the versions which will be declared next.
- `\MTgreekfont{\langle fontfamily \rangle}`: optional command with a mandatory argument which specifies the font for Greek letters in all `mathastext` math versions declared afterwards via `\Mathastext` or `\MTDeclareVersion`. Only effective with `LGRgreek` option.

<sup>38</sup>The allowed version names are as for the  $\text{\LaTeX}$  `\DeclareMathVersion` macro. Do not use “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.

<sup>39</sup>I do not especially recommend to use this in real life!

<sup>40</sup>more 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.

### 3.3.2 Commands usable everywhere

- `\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 skips are set to zero for the normal and bold math versions. In the case of the option `italic`, the default skip is set to zero.
- `\MTforallsskip{⟨math glue⟩}`: the default is to add a `.6667mu` math skip after each  $\forall$  (except with the option `italic` for which the default 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 skips are set to be zero by default 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 also at any time in the document.
- `\MTprimeskip{⟨math glue⟩}`: the default is to add a `0.5mu` skip before the derivative glyph, except for the `italic` option, and except in the normal and bold math versions with option `subdued`. The same observations apply.
- `\MTlowerast{⟨dimen⟩}`: 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`, `\MTnonlettersobeymathxx`, `\MTnonlettersdonotobeymathxx`, `\MTexplicitbracesobeymathxx`, `\MTexplicitbracesdonotobeymathxx`, `\MTeasynonlettersobeymathxx`, `\MTeasynonlettersdonotobeymathxx`: these commands without argument must be used *outside* of math mode. `mathastext` issues automatically `\MTmathoperatorsobeymathxx`, `\MTeasynonlettersobeymathxx` and `\MTnonlettersdonotobeymathxx` at the time of `\usepackage{mathastext}`. See the discussion in section 2.5. The ‘explicit braces’ activation works only when `\MTnonlettersobeymathxx` has already been used.
- `\MTicinmath`: this command tells `mathastext` to add italic corrections after all letters in math mode. Its effect is cancelled inside math alphabets (ex-

cept `\mathnormal`). The command is issued by default in the preamble when the shape of the letters used in math mode is neither italic nor slanted. It is reissued each time a math version is entered, under the same conditions (and except of course for the normal and bold subdued math versions). Its effect is local to the group or environment in which it has been issued. From inside math mode, it will only revert an earlier `\MTnoicinmath` from the same math group, and the math mode itself must have been entered with the italic corrections on.

- `\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). Its effect remains local to the group or environment where it was issued.
- `\MTICinmath`, `\MTnoICinmath`: these commands set up the italic corrections only for the uppercase letters. Using `\MTICinmath` de-activates the added italic corrections for uppercase letters in the arguments of *all* the math alphabet commands.
- `\MTicalsoinmathxx`: this command de-activates the de-activation of the italic corrections inside the arguments to the math alphabet commands apart from `\mathnormal`. It can be issued in as well as outside of math mode.<sup>41</sup> To cancel its effect either enclose it in a group or environment or re-issue `\MTicinmath` after it.

### 3.3.3 Body-only commands

- `\MTversion` [*<nametext>*] {*<namemath>*}:<sup>42</sup> in the absence of the optional argument changes simultaneously the text and the math fonts to be the fonts corresponding to the version *<namemath>*. If there is an optional argument then the text fonts will use *<nametext>* and the math mode will use *<namemath>*. To change only the math fonts, one may use the L<sup>A</sup>T<sub>E</sub>X command `\mathversion`. However this is not recommended as `mathastext` does quite a lot of additional configuration when invoked with `\MTversion`.

Each invocation of `\MTversion` checks the chosen shape of letters in math mode and if it is not *italic* or *slanted* it activates the automatic insertion of italic corrections in math mode, for better positioning of subscripts. See the discussion in the section 2.6. With the `frenchmath` option the package checks separately whether to insert the italic corrections after lowercase and/or uppercase letters.

With the `subdued` option, `\MTversion{normal}` and `\MTversion{bold}` do `\MTmathoperatorsdonotobeymathxx` (and `\MTnonlettersdonotobeymathxx`).

<sup>41</sup>it is provided for the `mathastext` defined math alphabet `\mathnormalbold` which contrarily to `\mathnormal` is not treated apart from the other math alphabets.

<sup>42</sup>`\MTversion` is also available as `\MTVersion`, `\Mathastextversion` and `\mathastextversion`.

All further commands are for math mode only.

- `\hbar`: this is constructed (in a way compatible with the `italic` option) from the `h` letter and the `ˉ` accent from the `mathastext` font. Note that `\mathrm{\hbar}` and `\mathbf{\hbar}` should work and that `\hbar` does scale in subscripts and exponents. Only for T1 and OT1 (or LY1) encodings.
- `\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.
- `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf`, `\mathtt`: modifications of the original `\mathnormal`, `\mathrm`, `\mathbf`, `\mathit`, `\mathsf`, `\mathtt` to use the mathastextified font. The underlying internal L<sup>A</sup>T<sub>E</sub>X structures related to the original commands are not overwritten, so the original commands can be saved under other names before `\usepackage{mathastext}`, to be used in case of necessity (this is what option `subdued` does.)
- `\mathnormalbold`: a bold version of `\mathnormal`. Differs from `\mathbf` when the `italic` option has been used, or when use has been made of `\MTlettershape` to specify a shape for letters distinct from the one for digits and operator names, or similarly when the math version has been declared via `\MTDeclareVersion` with its optional parameter for shape of letters.
- `\inodot`, `\jnodot`: the corresponding glyphs in the chosen font for math mode. By default, will overwrite `\imath` and `\jmath`. With version 1.12 by default `\i` and `\j` work also in math mode and give then `\inodot`, resp. `\jnodot`. This should work for all 8bit-encodings having these glyphs, and also in Unicode.
- `\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<sup>A</sup>T<sub>E</sub>X 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`.<sup>43</sup> They are `\prod`  $\prod$  `\sum`  $\sum$  `\implies`  $\Rightarrow$  `\impliedby`  $\Leftarrow$  `\iff`  $\iff$  `\shortiff`  $\Leftrightarrow$  `\to`  $\rightarrow$  `\longto`  $\longrightarrow$  `\mapsto`  $\mapsto$  `\longmapsto`  $\longmapsto$  `\aleph`  $\aleph$  `\infty`  $\infty$  `\emptyset`  $\emptyset$  `\surd`  $\surd$  `\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`  $|$  `\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`  $\langle$  `\rangle`  $\rangle$ . 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  $\prod$   $\sum$  in inline math, and in display math the Computer Modern ones (or whatever is set up by other packages) :

$$\prod \sum$$

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 `\defaultprod` and `\defaultsum` will refer to the `\prod` and `\sum` before redefinition by the package: this is to allow constructs such as `\displaystyle\defaultprod` or `\textstyle\defaultprod`, because they would not work with the `\prod` and `\sum` as re-defined by the package.

### 3.4 Complete list of options

- `basic`: only mathastextify letters and digits.
- `subdued`: do not change the default fonts or the math alphabets in math mode for the normal and bold math versions, turn on the `mathastext`-ification only after an explicit `\MTversion` (or `\mathastextversion`) command activating an additional math version as declared in the preamble. With option `subdued` each `\MTversion{normal}` or `\MTversion{bold}` does `\MTmathoperatorsdonotobeymathxx` (and `\MTnonlettersdonotobeymathxx`).
- `italic`: the letters default to italic shape in math mode.
- `frenchmath`: italic lowercase Latin letters, but uppercase Latin letters in the same font as for digits and operator names. In general this means that they will be upright. In case of the `LGRgreek` option, `frenchmath` influences also the shape of the Greek letters.

<sup>43</sup>option `asterisk` is also required to treat the `*`. Recall from section 2.5 that the asterisk in math mode (also when using the control sequence `\ast`) appears then to T<sub>E</sub>X to be a composite object.



- `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.
- `asterisk`: use the text font (or the Symbol font) asterisk in math mode.
- `noendash`: the minus sign will be the - from the text font, not the en-dash –.
- `nohbar`: prevents `mathastext` from defining its own `\hbar`.
- `nolessnomore`: besides `!?`, `,.:`, `+–=()`, `[]/`, `#$%&` `mathastext` treats also `<>|`, `{}` and `\`. Use this option to let it not do it. This is the default in case of OT1-encoding.
- further excluding options: `noexclam` `!?`, `nopunctuation`, `,.:`, `noplus`, `minus`, `noplusminus` `+–`, `noequal` `=`, `noparenthesis` `()[]/`, `nospecials` `#$%&` 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 T<sub>E</sub>X 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.
- `symbolgreek`, `symboldigits`: to let Greek letters (digits) use the Symbol font.
- `symbolre`: replaces `\Re` and `\Im` by the Symbol glyphs  $\Re$ ,  $\Im$  and defines a `\DotTriangle` command (`\dot{\triangleright}`).
- `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 is for a font which is also available in LGR-encoding. It is possible to change the font per math version, via the use of the `\MTgreekfont` command in the preamble.
- **LGRgreeks**: each declared math version will be supposed to be with a font which is also available in LGR-encoding.
- **selfGreek**: this is for a font which is also available in OT1-encoding and contains the glyphs for the default eleven capital Greek letters.
- **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**, **upGreek**, **itGreek**: options to tell to use `\itdefault` or `\updefault` for the lowercase and uppercase (or only the uppercase) Greek letters. Only operant in the case of the **LGRgreek(s)** and **selfGreek(s)** options.
- **mathaccents**: use the text font also for the math accents. As in vanilla L<sup>A</sup>T<sub>E</sub>X, they are taken from the font for the digits and `\log`-like names. Obey the alphabet changing commands. Will work only for T1, LY1, or OT1-compatible encodings.
- **defaultbf**, **defaultit**, **defaultsf**, **defaulttt**: do not set up, respectively, the `\mathbf`, `\mathit`, `\mathsf`, and `\mathtt` commands to use the mathastext-ified font. This also prevents **mathastext** to create internally `\Mathxx` alphabets (it never overwrites the original `\mathxx` things but let `\mathxx` point to `\Mathxx` instead), so one can use these options if one encounters a ‘too many math alphabets’ L<sup>A</sup>T<sub>E</sub>X error.
- **defaultnormal**, **defaultrm**: do not identify the default `\mathnormal` (resp. `\mathrm`) with the newly created `\Mathnormal` (resp. `\Mathrm`) commands which use the mathastextified fonts in each math version.
- **defaultalphabets**: all the **defaulttx** options together, and additionally tells **mathastext** not to create the `\mathnormalbold` alphabet either.
- **defaultimath**: do not overwrite `\imath` and `\jmath`, do not extend `\i` and `\j` to math mode use.
- **defaultmathsizes**: do not change the L<sup>A</sup>T<sub>E</sub>X 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 Implementation

```

1 \ProvidesPackage{mathastext}
2 [2013/01/10 v1.2e Use the text font in math mode (jfB)]
3 \NeedsTeXFormat{LaTeX2e}

```

Testing for XeTeX and LuaLaTeX. I should load some package for this code which I copied somewhere. 2013/01/01: at least the code now does not overwrite previous `\ifXeTeX` or `\ifLuaTeX`...

```

4 \newif\ifmst@XeTeX
5 \begingroup\expandafter\expandafter\expandafter\endgroup
6 \expandafter\ifx\csname XeTeXinterchartoks\endcsname\relax
7   \mst@XeTeXfalse
8 \else
9   \mst@XeTeXtrue
10 \fi
11 \newif\ifmst@LuaTeX
12 \begingroup\expandafter\expandafter\expandafter\endgroup
13 \expandafter\ifx\csname directlua\endcsname\relax
14   \mst@LuaTeXfalse
15 \else
16   \mst@LuaTeXtrue
17 \fi

```

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

```

18 \def\mst@oti{OT1}\def\mst@ti{T1}\def\mst@lyi{LY1}
19 \def\mst@eui{EU1}\def\mst@euii{EU2}
20 \newif\ifmst@goahead
21 \newif\ifmst@abort
22 \newif\ifmst@optionalparam

```

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

```

\mst@fam 23 \def\mst@enc{\encodingdefault}
\mst@ser 24 \def\mst@fam{\familydefault}
\mst@opsh 25 \def\mst@ser{\seriesdefault}
\mst@bold 26 \def\mst@opsh{\shapedefault} %% will be default shape for operator names
\mst@ltsh 27 \def\mst@bold{\bfdefault}
28 \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`.

```

29 \edef\mst@greekfont{\familydefault} %% v 1.15c

```

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.

```

30 \newif\ifmst@italic
31 \newif\ifmst@frenchmath
32 \DeclareOption{italic}{\mst@italictrue}
33 \def\mst@ltsh{\itdefault}}
34 \DeclareOption{frenchmath}{\mst@frenchmathtrue\mst@italictrue}
35 \def\mst@ltsh{\itdefault}}

```

```

36 %%
37 \newif\ifmst@endash\mst@endashtrue
38   \DeclareOption{endash}{\mst@endashtrue}
39   \DeclareOption{noendash}{\mst@endashfalse}
40 \newif\ifmst@emdash
41   \DeclareOption{emdash}{\mst@emdashtrue\mst@endashfalse}
42 %%
43 \newif\ifmst@alldelims
44 \edef\mst@tmp{\encodingdefault}\ifx\mst@oti\mst@tmp\else\mst@alldelimstrue\fi
45   \DeclareOption{alldelims}{\mst@alldelimstrue}
46   \DeclareOption{nolessnomore}{\mst@alldelimsfalse}
47 %% new with 1.2
48 \newif\ifmst@nosmalldelims
49   \DeclareOption{nosmalldelims}{\mst@nosmalldelimstrue}
50 %%
51 \newif\ifmst@noplus
52   \DeclareOption{noplus}{\mst@noplustrue}
53 \newif\ifmst@nominus
54   \DeclareOption{nominus}{\mst@nominustrue}
55 \DeclareOption{noplusnominus}{\ExecuteOptions{noplus,nominus}}
56 %%
57 \newif\ifmst@noparen
58   \DeclareOption{noparenthesis}{\mst@noparenttrue}
59 \newif\ifmst@nopunct
60   \DeclareOption{nopunctuation}{\mst@nopuncttrue}
61 \newif\ifmst@noequal
62   \DeclareOption{noequal}{\mst@noequaltrue}
63 \newif\ifmst@noexclam
64   \DeclareOption{noexclam}{\mst@noexclamtrue}
65 \newif\ifmst@asterisk
66   \DeclareOption{noasterisk}{\PackageWarningNoLine{mathastext}
67     {option 'noasterisk' is deprecated.^^J\space\space\space
68     Check the documentation}}
69   \DeclareOption{asterisk}{\mst@asterisktrue}
70   \AtBeginDocument{
71     \everymath\expandafter{\the\everymath \mst@doasterisk}
72     \everydisplay\expandafter{\the\everydisplay \mst@doasterisk}}
73 \newif\ifmst@nospecials
74   \DeclareOption{nospecials}{\mst@nospecialstrue}
75 \DeclareOption{basic}{\ExecuteOptions{noparenthesis,nopunctuation,%
76 noplusnominus,noequal,noexclam,nospecials,nolessnomore}}
77 %%
78 \newif\ifmst@nohbar
79   \DeclareOption{nohbar}{\mst@nohbartrue}
80 \newif\ifmst@nodigits
81   \DeclareOption{nodigits}{\mst@nodigitstrue}
82 \newif\ifmst@defaultmath
83   \DeclareOption{defaultmath}{\mst@defaultmathtrue}
84 \newif\ifmst@mathaccents

```

```

85 \DeclareOption{mathaccents}{\mst@mathaccentstrue}
86 %%
87 \newif\ifmst@needsymbol
88 \newif\ifmst@symboldelimiters
89 \DeclareOption{symboldelimiters}{\mst@needsymboltrue\mst@symboldelimiterstrue}
90 \newif\ifmst@symboldigits
91 \DeclareOption{symboldigits}{\mst@needsymboltrue\mst@symboldigitstrue}
92 \newif\ifmst@symbolgreek
93 \DeclareOption{symbolgreek}{\mst@needsymboltrue\mst@symbolgreektrue}
94 \newif\ifmst@symbolre
95 \DeclareOption{symbolre}{\mst@needsymboltrue\mst@symbolretrue}
96 \newif\ifmst@symbolmisc
97 \DeclareOption{symbolmisc}{\mst@needsymboltrue\mst@symbolmisctrue}
98 \DeclareOption{symbol}{\ExecuteOptions{symbolgreek,symbolmisc,symbolre}}
99 \DeclareOption{symbolmax}{\ExecuteOptions{symbol,symboldelimiters}}
100 %%
101 \newif\ifmst@needeuler
102 \newif\ifmst@eulerdigits
103 \DeclareOption{eulerdigits}{\mst@needeulertrue\mst@eulerdigitstrue}
104 \newif\ifmst@eulergreek
105 \DeclareOption{eulergreek}{\mst@needeulertrue\mst@eulergreektrue}
106 %%
107 \newif\ifmst@selfGreek
108 \DeclareOption{selfGreek}{\mst@selfGreektrue}
109 \newif\ifmst@selfGreeks
110 \DeclareOption{selfGreeks}{\mst@selfGreekstrue\mst@selfGreektrue}
111 \newif\ifmst@LGRgreek
112 \DeclareOption{LGRgreek}{\mst@LGRgreektrue}
113 \newif\ifmst@LGRgreeks
114 \DeclareOption{LGRgreeks}{\mst@LGRgreekstrue\mst@LGRgreektrue}
115 %%
116 \def\mst@greek@select{0}
117 \newif\ifmst@itgreek
118 \newif\ifmst@upgreek
119 \DeclareOption{itgreek}{\mst@itgreektrue}
120 \DeclareOption{upgreek}{\mst@upgreektrue}
121 \DeclareOption{itGreeks}{\def\mst@greek@select{1}}
122 \DeclareOption{upGreeks}{\def\mst@greek@select{2}}
123 %%

```

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.

```

124 \newif\ifmst@defaultnormal
125 \DeclareOption{defaultnormal}{\mst@defaultnormaltrue}
126 \newif\ifmst@defaulttrm
127 \DeclareOption{defaulttrm}{\mst@defaulttrmtrue}
128 \newif\ifmst@defaultbf
129 \DeclareOption{defaultbf}{\mst@defaultbftrue}

```

```

130 \newif\ifmst@defaulttit
131     \DeclareOption{defaulttit}{\mst@defaulttittrue}
132 \newif\ifmst@defaultsf
133     \DeclareOption{defaultsf}{\mst@defaultsftrue}
134 \newif\ifmst@defaultttt
135     \DeclareOption{defaultttt}{\mst@defaultttttrue}
136 \newif\ifmst@nonormalbold
137 \DeclareOption{defaultalphabets}{\ExecuteOptions{defaultnormal,defaultrm,%
138 defaultbf,defaultit,defaultsf,defaultttt}\mst@nonormalboldtrue}
    mathastext considers the default script and especially scriptscript sizes to be far too small, and
    it will modify them. An option maintains the default.
139 \newif\ifmst@defaultsizes
140     \DeclareOption{defaultmathsizes}{\mst@defaultsizestrue}
141 \newif\ifmst@twelve
142     \DeclareOption{12pt}{\mst@twelvetrue}
143 \newif\ifmst@fouriervec
144     \DeclareOption{fouriervec}{\mst@fouriervectrue}
    1.15: the subdued option.
145 \newif\ifmst@subdued
146     \DeclareOption{subdued}{\mst@subduedtrue}
147 \DeclareOption*{\PackageWarningNoLine{mathastext}{Unknown option ‘\CurrentOption’}}
148 \ProcessOptions\relax

```

<pre> \exists \mst@exists@skip \forall \mst@forall@skip </pre>	<p>1.15e [2012/10/21]: math skip/glue <i>after</i> <code>\exists</code> and <code>\forall</code>, this is useful with upright letters in math mode. Each math version has its own user defined values for the skips, stored as macros. The redefinitions of <math>\exists</math> and <math>\forall</math> are done only at the end of the package as the <code>symbol</code> option will also want to redefine these math symbols.</p>
--	--

The subdued option (later and only for the normal and bold math version) and the italic option (here) set to zero the package default skips. With 1.2 the skips can be modified on the fly in the document, they are not necessarily set in the preamble once and for all for each math version.

```

149 \newmuskip\mst@exists@muskip %% v 1.15e
150 \newmuskip\mst@forall@muskip
151 \def\mst@exists@skip{1mu}
152 \def\mst@forall@skip{.6667mu}
153 \ifmst@italic\ifmst@frenchmath\else
154     \def\mst@exists@skip{0mu}\def\mst@forall@skip{0mu}\def\mst@prime@skip{0mu}
155 \fi\fi
156 \AtEndOfPackage{% must be at end of code
157 \let\mst@stdexists\exists
158 \let\mst@stdforall\forall
159 \renewcommand\exists{\mst@stdexists\mskip\mst@exists@muskip}
160 \renewcommand\forall{\mst@stdforall\mskip\mst@forall@muskip}
161 }

```

<pre> \prime \mst@prime@skip \active@math@prime \MTnormalprime </pre>	<p>1.2 [2012/12/17]: math skip/glue <i>before</i> the <code>\prime</code> glyph. This is useful with the default CM glyph and upright letters (in contrast the prime from <code>txfonts</code> works fine with upright letters).</p>
---	--

For this we replace the L<sup>A</sup>T<sub>E</sub>X kernel `\active@math@prime` with our own skip-enhanced version `\mst@active@math@prime`.

1.2b [2012/12/31]: doing

```
{\catcode'\'= \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\bb1@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`.

```
162 \newmuskip\mst@prime@muskip    %% v 1.2
163 \def\mst@prime@skip{.5mu}
164 \ifmst@italic\ifmst@frenchmath\else\def\mst@prime@skip{0mu}\fi\fi
165 \def\mst@active@math@prime{\sp\bgroup\mskip\mst@prime@muskip\prim@s}
166 {\catcode'\'=12
167 \gdef\mst@modifyprime{\mst@mathactivate'}\mst@active@math@prime}}
168 \expandafter\let\csname mst@ifdone\string'\endcsname\iffalse
169 \AtBeginDocument{
170 \everymath\expandafter{\the\everymath \mst@modifyprime}
171 \everydisplay\expandafter{\the\everydisplay \mst@modifyprime}
172 }
173 \newcommand*\MTnormalprime{\let\mst@modifyprime\relax}
```

`\MTexistsskip` 1.15e: These user macros set up the amount of mu skip or glue after `\exists` or `\forall`, on a math version basis (the normal and bold math versions inherit the same skips; these skips are set to zero in case of the subdued, or the italic option), as each `\Mathastext[⟨version_name⟩]` stores the then current values in the definition of the math version.

`\MTforallskip`  
`\MTprimeskip`

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.

```
174 \newcommand*\MTexistsskip[1]{\edef\mst@exists@skip{#1}%
175   \expandafter\mst@exists@muskip\mst@exists@skip\relax}
176 \newcommand*\MTforallskip[1]{\edef\mst@forall@skip{#1}%
177   \expandafter\mst@forall@muskip\mst@forall@skip\relax}
178 \newcommand*\MTprimeskip[1]{\edef\mst@prime@skip{#1}%
179   \expandafter\mst@prime@muskip\mst@prime@skip\relax}
180 \let\Mathastextexistsskip\MTexistsskip
181 \let\Mathastextforallskip\MTforallskip
182 \let\Mathastextprimeskip\MTprimeskip
183 \let\mathastextexistsskip\MTexistsskip
184 \let\mathastextforallskip\MTforallskip
185 \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 `\everymath@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 `)`). With `lualatex` no error is signaled when `mathastext` has done `\mathcode'("8000`, but the `\Mathstrutbox@` 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 `noparen` was used, we leave everything untouched.

```
186 \ifmst@noparen\else
187 \AtBeginDocument{
188 \@ifundefined{resetMathstrut@}{\fi}%
189   \PackageWarningNoLine{mathastext}{a custom version of the amsmath macro^^J%
190     \space\space\space\string\resetMathstrut@\space will replace the original}
191   \ifmst@symboldelimiters
192   \def\resetMathstrut@{%
193     \setbox\z@\hbox{\the\textfont\symmtpsymbol\char40
194                     \the\textfont\symmtooperatorfont\char40
195                     \the\textfont\symoperators\char40}%
196     \ht\Mathstrutbox@\ht\z@ \dp\Mathstrutbox@\dp\z@}
197   \else
198   \def\resetMathstrut@{%
199     \setbox\z@\hbox{\the\textfont\symmtooperatorfont\char40
200                     \the\textfont\symoperators\char40}%
201     \ht\Mathstrutbox@\ht\z@ \dp\Mathstrutbox@\dp\z@}
202   \fi}}
203 \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: `$x^?$` or `$x\mathrel{?}y$` now create errors. They must be input `$x^{?}$`, respectively `$x\mathrel{?}y$`.

The disactivating macro `\MTnonlettersdonotobeymathxx` 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 on TeX StackExchange 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 '.

`\mst@do@az` 1.2b [2012/12/28] now that we understand the great advantages of "8000 we do it also for all letters a-z and A-Z to insert automatically the italic corrections. See the discussion in the user manual. Ironically I wrote the code initially for the `italic` option only to realize later it was more suitable to using an *upright* text font in math mode!

Note: 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 used also to get the non-letters obey math alphabet while maintaining the TeX spacings, I could not use group braces. I should have added them later in the case of letters but then forgot. Fixed. (the group braces do not prevent ligatures when the letters are arguments to the math alphabet commands, the added macro `\mst@itcorr` then expands to nothing).

`\MTnoicinmath` can be used inside math mode (and has its scope limited by the group of course).

`\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).

`\MTicinmath` can also be used inside math mode, but it can then only revert an earlier `\MTnoicinmath` inside the same math group. So the math mode had to be entered with italic corrections on.

```
\MTnonletters-
  obeymathxx 204 \newtoks\mst@do@nonletters
\MTnonletters- 205 \newtoks\mst@do@easynonletters
donotobeymathxx 206 \newtoks\mst@do@az
                207 \newtoks\mst@do@AZ
                208 \newcommand*\MTnonlettersdonotobeymathxx{\let\mst@the\@gobble}
                209 \newcommand*\MTnonlettersobeymathxx{\let\mst@the\the}
                210 \newcommand*\MTeasynonlettersdonotobeymathxx{\let\mst@theeasy\@gobble}
                211 \newcommand*\MTeasynonlettersobeymathxx{\let\mst@theeasy\the}
                212 \MTnonlettersdonotobeymathxx % 1.2c !!!
                213 \MTeasynonlettersobeymathxx
                214 \newcommand*\MTicinmath{%
                215     \let\mst@thef\the
                216     \let\mst@theF\the
                217     \def\mst@itcorr{\ifnum\fam=\m@ne\else\ifnum\fam=\symmtletterfont\fi}%
                218     \let\mst@ITcorr\mst@itcorr}
                219 \newcommand*\MTnoicinmath{% also usable in math mode
                220     \def\mst@itcorr{}\def\mst@ITcorr}%
                221     \let\mst@thef\@gobble\let\mst@theF\@gobble}
                222 \newcommand*\MTICinmath{%
                223     \let\mst@theF\the
                224     \def\mst@ITcorr{\ifnum\fam=\m@ne\fi}}
                225 \newcommand*\MTnoICinmath{% also usable in math mode
                226     \def\mst@ITcorr}%
                227     \let\mst@theF\@gobble}
                228 \newcommand*\MTicalsoinmathxx{%
                229     \ifx\mst@itcorr\empty\else\def\mst@itcorr{\fi}
```

```

230 \ifx\mst@ITcorr\@empty\else\def\mst@ITcorr{\}\fi}
231 \AtBeginDocument{
232 \everymath\expandafter{\the\everymath \mst@the\mst@do@nonletters
233 \mst@theeasy\mst@do@easynonletters
234 \mst@thef\mst@do@az \mst@theF\mst@do@AZ}
235 \everydisplay\expandafter{\the\everydisplay \mst@the\mst@do@nonletters
236 \mst@theeasy\mst@do@easynonletters
237 \mst@thef\mst@do@az \mst@theF\mst@do@AZ}
238 }

\mst@mathactivate
\addtodo@nonletters
\do@easynonletters
\mst@addtodo@az
\mst@addtodo@AZ
239 \def\mst@magic@v #1#2#3#4#5{#1#3#4}
240 \def\mst@magic@vi #1#2#3#4#5#6{#1#2#4#5}
241 \def\mst@fork{\ifmmode\mst@magic@v\fi\@thirdofthree}
242 \def\mst@safefork{\ifmmode\if@safe@actives\else\mst@magic@vi\fi\fi\@thirdofthree}
243 \def\mst@do@activecase#1#2#3{% #1 is a category 11 or 12 character token
244 \ifundefined{active@char#1}{\%
245 \ifcat #1a\mathcode'#1=#2\else
246 \ifx\relax #2\relax\mathcode'#1=#1 \else\mathcode'#1=#3\fi\fi
247 \expandafter\expandafter\expandafter\let\expandafter\expandafter
248 \csname mst@orig@user@active#1\endcsname
249 \csname user@active#1\endcsname
250 \expandafter\expandafter\expandafter\let\expandafter\expandafter
251 \csname mst@orig@normal@char#1\endcsname
252 \csname normal@char#1\endcsname
253 \ifcat #1a%
254 \expandafter\edef\csname user@active#1\endcsname
255 {\noexpand\mst@fork {{#2}\noexpand#3}}\}\expandafter
256 \noexpand\csname mst@orig@user@active#1\endcsname
257 }%
258 \expandafter\edef\csname normal@char#1\endcsname
259 {\noexpand\mst@safefork {{#2}\noexpand#3}}\}\expandafter
260 \noexpand\csname mst@orig@normal@char#1\endcsname
261 }%
262 \else
263 \expandafter\edef\csname user@active#1\endcsname
264 {\noexpand\mst@fork {{#2}\noexpand#3}\expandafter
265 \noexpand\csname mst@orig@user@active#1\endcsname
266 }%
267 \expandafter\edef\csname normal@char#1\endcsname
268 {\noexpand\mst@safefork {{#2}\noexpand#3}\expandafter
269 \noexpand\csname mst@orig@normal@char#1\endcsname
270 }%
271 \fi}}
272 \begingroup % make sure ~ is active at mathastext loading time
273 \catcode'\~=\active
274 \def\x{\endgroup
275 \def\mst@mathactivate##1##2##3{% ##1 guaranteed of cat 11 or 12
276 \begingroup

```

```

277 \lccode'~='##1
278 \lccode'##1='##1
279 \lowercase{\endgroup
280 \csname mst@ifdone##1\endcsname
281 \else
282 \ifnum\catcode'##1=\active
283 \mst@do@activecase ##1{##2}##3
284 % careful as ##2 is empty in the asterisk and
285 % prime case!
286 \else
287 \mathcode'##1="8000
288 % I use " many times later, \string" everywhere would be a pain
289 \ifcat##1a\def~{{##2##3}}\else\def~{{##2##3}}\fi
290 \fi
291 \fi}%
292 \expandafter\let\csname mst@ifdone##1\endcsname=\iftrue}}
293 \x
294 \def\mst@addtodo@nonletters#1#2#3{%
295 % #1 will be of cat 11 or 12.
296 % #2 is empty for asterisk and right quote
297 \expandafter\let\csname mst@ifdone##1\endcsname\iffalse
298 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
299 \mst@mathactivate#1{#2}##3}%
300 }
301 \def\mst@addtodo@easynonletters#1#2{% #1 is a one char control sequence
302 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters\mathcode'#1=#2}%
303 }
304 \def\mst@addtodo@az#1#2#3{%
305 \expandafter\let\csname mst@ifdone##1\endcsname\iffalse
306 \mst@do@az\expandafter{\the\mst@do@az\mst@mathactivate#1#2#3}
307 }
308 \def\mst@addtodo@AZ#1#2#3{%
309 \expandafter\let\csname mst@ifdone##1\endcsname\iffalse
310 \mst@do@AZ\expandafter{\the\mst@do@AZ\mst@mathactivate#1#2#3}%
311 }

```

`\newmcodes@` 1.15d: this 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).

```

312 \ifpackageloaded{amsmath}
313 {\let\newmcodes@\relax} % brutal, but bye bye and don't come back.
314 {}

```

**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  $\text{\LaTeX}$  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’, respectively<sup>1</sup>. 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 ((1): but 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 [update: I have since been told by TH that the next LuaLaTeX release will change this] 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.

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 LuaLaTeX 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.

```

315 \ifmst@subdued
316   \def\mst@reserved#1\getanddefine@fonts\symletters#2#3\@nil{%
317     \def\mst@normalmv@letter{#2}}
318   \expandafter\mst@reserved\mv@normal\@nil
319   \def\mst@reserved#1\getanddefine@fonts\symletters#2#3\@nil{%
320     \def\mst@boldmv@letter{#2}}
321   \expandafter\mst@reserved\mv@bold\@nil
322   \def\mst@reserved#1\getanddefine@fonts\symoperators#2#3\@nil{%
323     \def\mst@normalmv@operator{#2}}
324   \expandafter\mst@reserved\mv@normal\@nil
325   \def\mst@reserved#1\getanddefine@fonts\symoperators#2#3\@nil{%
326     \def\mst@boldmv@operator{#2}}
327   \expandafter\mst@reserved\mv@bold\@nil
328 %%
329   \edef\mst@tmp{\encodingdefault}
330   \def\mst@reserved#1/#2/#3/#4/{\gdef\mst@debut{#1}\gdef\mst@reste{#2/#3/#4}}
331   \begingroup\escapechar\m@ne
332     \xdef\mst@funnyoti{\expandafter\string\csname OT1\endcsname}
333     \expandafter\expandafter\expandafter
334       \mst@reserved\expandafter\string\mst@normalmv@operator/
335   \endgroup
336   \ifx\mst@debut\mst@funnyoti\ifx\mst@tmp\mst@oti\def\mst@tmp{T1}\fi\fi
337   \edef\mst@normalmv@operator{\expandafter\noexpand\csname

```

```

338 \mst@tmp/\mst@reste\endcsname}
339 \begingroup\escapechar\m@ne
340 \expandafter\expandafter\expandafter
341 \mst@reserved\expandafter\string\mst@boldmv@operator/
342 \endgroup
343 \ifx\mst@debut\mst@funnyoti\ifx\mst@tmp\mst@oti\def\mst@tmp{T1}\fi\fi
344 \edef\mst@boldmv@operator{\expandafter\noexpand\csname
345 \mst@tmp/\mst@reste\endcsname}
346 \AtEndOfPackage{
347 \typeout{** ...entering subdued mode...}
348 \expandafter\SetSymbolFont@ \expandafter\mv@normal\mst@normalmv@letter\symmtletterfont
349 \expandafter\SetSymbolFont@ \expandafter\mv@bold\mst@boldmv@letter\symmtletterfont
350 \expandafter\SetSymbolFont@ \expandafter\mv@normal\mst@normalmv@operator\symmtoperatorfont
351 \expandafter\SetSymbolFont@ \expandafter\mv@bold\mst@boldmv@operator\symmtoperatorfont
352 \typeout{** ...done.}
353 }
354 \fi % fin de ce \ifmst@subdued

```

In the short-lived 1.15e I was doing the following for alphabets:

```

\def\mst@reservedc#1#2#3#4{\def\mst@normalmv@mathbf{#4#3}}
\def\mst@reserveda#1{%
\def\mst@reservedb##1\install@mathalphabet#1##2##3\@nil{\mst@reservedc##2}%
\expandafter\mst@reservedb\mv@normal\@nil}
\expandafter\mst@reserveda\csname mathbf\space\endcsname

```

and later in the code:

```

\expandafter\expandafter\expandafter\SetMathAlphabet@
\expandafter\expandafter\expandafter\mv@normal
\expandafter\mst@normalmv@mathbf\csname Mathbf\space \endcsname\Mathbf

```

It does work! but `\let\mst@original@bf\mathbf` is so much simpler. And also safer, because `\mathbf` could have been redefined using `\DeclareSymbolFontAlphabet...` (I could have provided the necessary check to the already bloated code...)

**mtoperatorfont** 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.

```

355 \DeclareSymbolFont{mtoperatorfont}
356 {\mst@enc}{\mst@fam}{\mst@ser}{\mst@opsh}

```

**\operator@font** We modify this L<sup>A</sup>T<sub>E</sub>X 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 \symmtoperatorfont I add a modification
obeymathxx       which makes the declared operator names sensitive to the math alphabets... ouh le vilain!
\MTmathoperators- 357 \newcommand*{\MTmathoperatorsobeymathxx}
donot-           358 {\def\operator@font{\mathgroup\ifnum\fam=\m@ne\symmtoperatorfont\else\fam\fi}}
obeymathxx       359 \newcommand*{\MTmathoperatorsdonotobeymathxx}

```

```

360 {\def\operator@font{\mathgroup\symmoperatorfont}}
361 \MTmathoperatorsobeymathxx

mtletterfont In 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.

362 \DeclareSymbolFont{mtletterfont}
363      {\mst@enc}{\mst@fam}{\mst@ser}{\mst@ltsh}

\Mathnormal We redefine the default normal, rm, bf, it, sf, and tt alphabets, but this will be done via
\Mathrm \renewcommand{\mathrm}{\Mathrm} etc... and (1.15f) the previous status of the math alpha-
\Mathbf bets is recorded for the sake of the subdued option.
\Mathit We follow the standard LATEX behavior for \mathbf, which is to pick up the bold series of the
\Mathsf roman font (digits and operator names).
\Mathtt We will access (if no option is passed for Greek) the \omicron via \mathnormal. But un-
\mathnormalbold fortunately 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.

364 \let\mst@alph@omicron\mathnormal
365 \@ifpackageloaded{fourier}{\ifslowed\else\let\mst@alph@omicron\mathrm\fi}{\fi}
366 \DeclareSymbolFontAlphabet{\Mathnormal}{mtletterfont}
367 \DeclareSymbolFontAlphabet{\Mathrm}{moperatorfont}
368 \ifmst@nonormalbold\else
369   \DeclareMathAlphabet{\mathnormalbold}{\mst@enc}{\mst@fam}{\mst@bold}{\mst@ltsh}
370 \fi\ifmst@defaultbf\else
371   \DeclareMathAlphabet{\Mathbf}{\mst@enc}{\mst@fam}{\mst@bold}{\mst@opsh}
372 \fi\ifmst@defaultit\else
373   \DeclareMathAlphabet{\Mathit}{\mst@enc}{\mst@fam}{\mst@ser}{\itdefault}
374 \fi\ifmst@defaultsf\else
375   \DeclareMathAlphabet{\Mathsf}{\mst@enc}{\sfdefault}{\mst@ser}{\mst@opsh}
376 \fi\ifmst@defaulttt\else
377   \DeclareMathAlphabet{\Mathtt}{\mst@enc}{\ttdefault}{\mst@ser}{\mst@opsh}
378 \fi
379 \let\mst@original@normal\mathnormal
380 \let\mst@original@rm\mathrm
381 \let\mst@original@bf\mathbf
382 \let\mst@original@it\mathit
383 \let\mst@original@sf\mathsf
384 \let\mst@original@tt\mathtt
385 \def\mst@restorealphabets{% for subdued
386   \let\mathnormal\mst@original@normal
387   \let\mathrm\mst@original@rm
388   \let\mathbf\mst@original@bf
389   \let\mathit\mst@original@it
390   \let\mathsf\mst@original@sf
391   \let\mathtt\mst@original@tt}
392 \def\mst@setalphabets{%
393   \ifmst@defaultnormal\else\renewcommand{\mathnormal}{\Mathnormal}\fi
394   \ifmst@defaulttrm\else\renewcommand{\mathrm}{\Mathrm}\fi

```

```

395 \ifmst@defaultbf\else\renewcommand{\mathbf}{\Mathbf}\fi
396 \ifmst@defaultit\else\renewcommand{\mathit}{\Mathit}\fi
397 \ifmst@defaultsf\else\renewcommand{\mathsf}{\Mathsf}\fi
398 \ifmst@defaulttt\else\renewcommand{\mathtt}{\Mathtt}\fi}
399 \ifmst@subdued\else\mst@setalphabets\fi

```

LGRgreek 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 `selfGreek` 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 `mtlgrfontupper` 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.

```

400 \def\mst@update@greeksh{
401   \def\mst@greek@lsh{\mst@ltsh} %% default behavior
402   \def\mst@greek@ush{\mst@opsh}
403   \ifmst@itgreek\def\mst@greek@lsh{\itdefault}
404   \def\mst@greek@ush{\itdefault}\fi
405   \ifmst@upgreek\def\mst@greek@lsh{\updefault}
406   \def\mst@greek@ush{\updefault}\fi
407   \ifmst@frenchmath
408     \ifmst@itgreek\else
409       \ifmst@upgreek\else
410         \def\mst@greek@lsh{\mst@opsh}
411         \def\mst@greek@ush{\mst@opsh}
412       \fi\fi
413   \fi
414   \ifcase\mst@greek@select
415     \or\def\mst@greek@ush{\itdefault}
416     \or\def\mst@greek@ush{\updefault}
417   \fi}
418 \mst@update@greeksh
419 \ifmst@LGRgreek
420   \DeclareFontEncoding{LGR}{}{}
421   \DeclareSymbolFont{mtlgrfontlower}{LGR}
422     {\mst@fam}{\mst@ser}{\mst@greek@lsh}
423   \DeclareSymbolFont{mtlgrfontupper}{LGR}
424     {\mst@fam}{\mst@ser}{\mst@greek@ush}
425 \else
426 \ifmst@selfGreek

```



```

427 \DeclareSymbolFont{mtselfGreekfont}{OT1}
428 {\mst@fam}{\mst@ser}{\mst@greek@ush}
429 \fi\fi

```

`mteulervm` In case we need the Euler font, we declare it here. It will use `uzeur.fd` from the `eulervm` package  
`\MathEuler` of Walter SCHMIDT  
`\MathEulerBold`

```

430 \ifmst@needeuler\typeout{** will use Euler font; command \string\MTEulerScale}
431 \DeclareSymbolFont{mteulervm}{U}{zeur}{m}{n}
432 \DeclareSymbolFontAlphabet{\MathEuler}{mteulervm}
433 \DeclareMathAlphabet{\MathEulerBold}{U}{zeur}{\mst@bold}{n}
434 \fi
435 \newcommand*\MTEulerScale[1]{\edef\zeu@Scale{#1}}
436 \let\MathastextEulerScale\MTEulerScale

```

L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> has a strange initial configuration where the capital Greek letters are of type `mathalpha`, but the lower Greek letters 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 `\MathEulerBold` alphabet commands (the `eulervm` package does this only for the bold font).

`mtpsymbol` In case we need the Symbol font, we declare it here. The macro `\psy@scale` will be used to scale  
`\MathPSymbol` the font (see at the very end of this file).

```

437 \ifmst@needsymbol\typeout{** will use Symbol font; command \string\MTSymbolScale}
438 \def\psy@scale{1}
439 \DeclareSymbolFont{mtpsymbol}{U}{psy}{m}{n}
440 \DeclareSymbolFontAlphabet{\MathPSymbol}{mtpsymbol}
441 \AtBeginDocument{
442   \DeclareFontFamily{U}{psy}{}
443   \DeclareFontShape{U}{psy}{m}{n}{<->s*[\psy@scale] psy}{ }
444 }
445 \fi
446 \newcommand*\MTSymbolScale[1]{\edef\psy@scale{#1}}
447 \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<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> `psnffs` core package.

`\pmvec` Definition of a poor man version of the `\vec` accent

```

448 \DeclareRobustCommand*\pmvec[1]{\mathord{\stackrel{\scriptstyle}{\textstyle{\raisebox{-.5ex}{%
449 {\tiny\boldmath$\mathord{\rightarrow}$}}}}{#1}}}

\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.

450 \ifmst@fouriervec
451 \DeclareFontEncoding{FML}{-}{}
452 \DeclareFontSubstitution{FML}{futm}{m}{it}
453 \DeclareSymbolFont{mtfourierpourvec}{FML}{futm}{m}{it}
454 \SetSymbolFont{mtfourierpourvec}{bold}{FML}{futm}{b}{it}
455 \DeclareMathAccent{\fouriervec}{\mathord}{mtfourierpourvec}{"7E}
456 \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
\MTshape package.
\MTboldvariant Note that using these macros in the preamble allows \Mathastext to set up math versions
\MTlettershape with a given font for math mode, and at the same time not modifying the \familydefault or
\romandefault etc...

457 \newcommand*\MTencoding[1]{\def\mst@enc{#1}}
458 \newcommand*\MTfamily[1]{\def\mst@fam{#1}}
459 \newcommand*\MTseries[1]{\def\mst@ser{#1}}
460 \newcommand*\MTshape[1]{\def\mst@opsh{#1}}
461 \ifmst@italic\else\def\mst@ltsh{#1}\fi
462 \newcommand*\MTboldvariant[1]{\def\mst@bold{#1}}
463 \newcommand*\MTlettershape[1]{\def\mst@ltsh{#1}}
464 \@onlypreamble\MTencoding
465 \@onlypreamble\MTfamily
466 \@onlypreamble\MTseries
467 \@onlypreamble\MTshape
468 \@onlypreamble\MTboldvariant
469 \@onlypreamble\MTlettershape
470 \let\Mathastextencoding\MTencoding
471 \let\Mathastextfamily\MTfamily
472 \let\Mathastextseries\MTseries
473 \let\Mathastextshape\MTshape
474 \let\Mathastextboldvariant\MTboldvariant
475 \let\Mathastextlettershape\MTlettershape

\MTitgreek 1.15c: These new macros can be used in-between calls to \Mathastext. They reset the shapes for
\MTupgreek Greek letters (applies to LGRgreek(s) and selfGreek(s) options). The \MTgreekfont presupposes
\MTitGreek either LGRgreek or selfGreek. \MTgreekfont{\familydefault} acts like turning on LGRgreek(s)
\MTupGreek or selfGreeks.
\MTgreekfont
476 \newcommand*\MTitgreek{%
477 \mst@itgreektrue\mst@upgreekfalse\def\mst@greek@select{0}}
478 \newcommand*\MTupgreek{%
479 \mst@upgreektrue\mst@itgreekfalse\def\mst@greek@select{0}}

```

```

480 \newcommand*\MTitGreek{\def\mst@greek@select{1}}
481 \newcommand*\MTupGreek{\def\mst@greek@select{2}}
482 \@onlypreamble\MTitgreek
483 \@onlypreamble\MTupgreek
484 \@onlypreamble\MTitGreek
485 \@onlypreamble\MTitGreeK
486 \let\Mathastextitgreek\MTitgreek
487 \let\Mathastextupgreek\MTupgreek
488 \let\MathastextitGreek\MTitGreek
489 \let\MathastextupGreek\MTupGreek
490 \newcommand*\MTgreekfont[1]{\def\mst@greekfont{#1}}
491 \@onlypreamble\MTgreekfont
492 \let\Mathastextgreekfont\MTgreekfont

```

**\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**.

```

493 \newcommand*\MTWillUse[5][\@empty]{
494   \MTencoding{#2}
495   \MTfamily{#3}
496   \MTseries{#4}
497   \MTshape{#5}
498   \ifmst@italic\MTlettershape{\itdefault}\fi % was missing in v 1.14 and prior
499   \ifx\@empty#1
500   \else
501   %% we check if optional argument was [], this does not detect [ ]
502   \def\mst@tmp{#1}
503   \ifx\@empty\mst@tmp\else\MTlettershape{#1}\fi
504   \fi
505   \Mathastext}
506 \@onlypreamble\MTWillUse
507 \let\MathastextWillUse\MTWillUse
508 \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.

```

509 \newcommand*\Mathastext[1][\@empty]{
510 \ifx\@empty#1 % no optional argument
511   \mst@update@greeksh
512   \edef\mst@encoding@normal{\mst@enc}
513   \edef\mst@family@normal{\mst@fam}
514   \edef\mst@series@normal{\mst@ser}
515   \edef\mst@shape@normal{\mst@opsh}
516   \edef\mst@ltshape@normal{\mst@ltsh}

```

```

517 \edef\mst@itdefault@normal{\itdefault}
518 \edef\mst@rmdefault@normal{\rmdefault}
519 \edef\mst@sfdefault@normal{\sfdefault}
520 \edef\mst@ttdefault@normal{\ttdefault}
521 \edef\mst@boldvariant@normal{\mst@bold}
522 \edef\mst@exists@skip@normal{\mst@exists@skip}
523 \edef\mst@forall@skip@normal{\mst@forall@skip}
524 \edef\mst@prime@skip@normal{\mst@prime@skip}
525 \edef\mst@encoding@bold{\mst@enc}
526 \edef\mst@family@bold{\mst@fam}
527 \edef\mst@series@bold{\mst@bold}
528 \edef\mst@shape@bold{\mst@opsh}
529 \edef\mst@ltshape@bold{\mst@ltsh}
530 \edef\mst@boldvariant@bold{\mst@bold}
531 \edef\mst@itdefault@bold{\itdefault}
532 \edef\mst@rmdefault@bold{\rmdefault}
533 \edef\mst@sfdefault@bold{\sfdefault}
534 \edef\mst@ttdefault@bold{\ttdefault}
535 \edef\mst@exists@skip@bold{\mst@exists@skip}
536 \edef\mst@forall@skip@bold{\mst@forall@skip}
537 \edef\mst@prime@skip@bold{\mst@prime@skip}
538 \MTicinmath
539 \@for\mst@tmp:=it,sl\do{\ifx\mst@tmp\mst@ltshape@normal\MTnoicinmath\fi}%
540 \ifmst@frenchmath
541     \MTICinmath
542     \@for\mst@tmp:=it,sl\do{\ifx\mst@tmp\mst@shape@normal\MTnoICinmath\fi}%
543 \fi
544 \ifmst@subdued
545     \MTeasyonlettersdonotobeymathxx
546     \MTnonlettersdonotobeymathxx
547     \MTmathoperatorsdonotobeymathxx
548     \MTnoicinmath
549     \ifmst@asterisk\let\mst@doasterisk\relax\fi
550     \def\mst@exists@skip@normal{0mu}
551     \def\mst@forall@skip@normal{0mu}
552     \def\mst@prime@skip@normal{0mu}
553     \def\mst@exists@skip@bold{0mu}
554     \def\mst@forall@skip@bold{0mu}
555     \def\mst@prime@skip@bold{0mu}
556 \else % not subdued
557     \ifmst@italic
558         \ifmst@frenchmath
559             \expandafter\mst@exists@muskip\mst@exists@skip\relax
560             \expandafter\mst@forall@muskip\mst@forall@skip\relax
561             \expandafter\mst@prime@muskip\mst@prime@skip\relax
562         \else
563             \def\mst@exists@skip@normal{0mu}
564             \def\mst@forall@skip@normal{0mu}
565             \def\mst@prime@skip@normal{0mu}

```

```

566     \def\mst@exists@skip@bold{0mu}
567     \def\mst@forall@skip@bold{0mu}
568     \def\mst@prime@skip@bold{0mu}
569     \fi
570   \else
571     \expandafter\mst@exists@muskip\mst@exists@skip\relax
572     \expandafter\mst@forall@muskip\mst@forall@skip\relax
573     \expandafter\mst@prime@muskip\mst@prime@skip\relax
574   \fi
575 \fi
576 %% v1.15f
577 \ifmst@nonormalbold\else
578   \SetMathAlphabet{\mathnormalbold}{normal}{\mst@encoding@normal}
579     {\mst@family@normal}
580     {\mst@boldvariant@normal}
581     {\mst@ltshape@normal}
582   \SetMathAlphabet{\mathnormalbold}{bold}{\mst@encoding@bold}
583     {\mst@family@bold}
584     {\mst@boldvariant@bold}
585     {\mst@ltshape@bold}
586 \fi
587 %% v1.15f adds \ifmst@default.. checks
588 \ifmst@subdued\else
589   \SetSymbolFont{mtletterfont}{normal}{\mst@encoding@normal}
590     {\mst@family@normal}
591     {\mst@series@normal}
592     {\mst@ltshape@normal}
593   \SetSymbolFont{mtletterfont}{bold}{\mst@encoding@bold}
594     {\mst@family@bold}
595     {\mst@series@bold}
596     {\mst@ltshape@bold}
597   \SetSymbolFont{mtooperatorfont}{normal}{\mst@encoding@normal}
598     {\mst@family@normal}
599     {\mst@series@normal}
600     {\mst@shape@normal}
601   \SetSymbolFont{mtooperatorfont}{bold}{\mst@encoding@bold}
602     {\mst@family@bold}
603     {\mst@series@bold}
604     {\mst@shape@bold}
605 \ifmst@defaultbf\else
606   \SetMathAlphabet{\Mathbf}{normal}{\mst@encoding@normal}
607     {\mst@family@normal}
608     {\mst@series@bold}
609     {\mst@shape@normal}
610   \SetMathAlphabet{\Mathbf}{bold}{\mst@encoding@bold}
611     {\mst@family@bold}
612     {\mst@series@bold}
613     {\mst@shape@bold}
614 \fi\ifmst@defaulttit\else

```

```

615 \SetMathAlphabet{\Mathit}{normal}{\mst@encoding@normal}
616             {\mst@family@normal}
617             {\mst@series@normal}
618             {\mst@itdefault@normal}
619 \SetMathAlphabet{\Mathit}{bold}{\mst@encoding@bold}
620             {\mst@family@bold}
621             {\mst@series@bold}
622             {\mst@itdefault@bold}
623 \fi\ifmst@defaultsf\else
624 \SetMathAlphabet{\Mathsf}{normal}{\mst@encoding@normal}
625             {\mst@sfdefault@normal}
626             {\mst@series@normal}
627             {\mst@shape@normal}
628 \SetMathAlphabet{\Mathsf}{bold}{\mst@encoding@bold}
629             {\mst@sfdefault@bold}
630             {\mst@series@bold}
631             {\mst@shape@bold}
632 \fi\ifmst@defaultttt\else
633 \SetMathAlphabet{\Mathtt}{normal}{\mst@encoding@normal}
634             {\mst@ttdefault@normal}
635             {\mst@series@normal}
636             {\mst@shape@normal}
637 \SetMathAlphabet{\Mathtt}{bold}{\mst@encoding@bold}
638             {\mst@ttdefault@bold}
639             {\mst@series@bold}
640             {\mst@shape@bold}
641 \fi\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.

```

642 \ifmst@needeuler
643 \SetSymbolFont{mteulervm}{bold}{U}{zeur}{\mst@boldvariant@normal}{n}
644 \SetMathAlphabet{\MathEulerBold}{normal}
645             {U}{zeur}{\mst@boldvariant@normal}{n}
646 \SetMathAlphabet{\MathEulerBold}{bold}
647             {U}{zeur}{\mst@boldvariant@normal}{n}
648 \fi
649 \ifmst@needsymbol\SetSymbolFont{mtpsymbold}{bold}
650             {U}{psy}{\mst@boldvariant@normal}{n}
651 \fi

```

**LGRgreek\*** LGRgreek, LGRgreeks, selfGreek, and selfGreeks options.

```

selfGreek* 652 \ifmst@subdued\else
653 \ifmst@LGRgreek
654 \SetSymbolFont{mtlgrfontlower}{normal}{LGR}
655             {\mst@greekfont}{\mst@series@normal}{\mst@greek@lsh}
656 \SetSymbolFont{mtlgrfontlower}{bold}{LGR}

```

```

657         {\mst@greekfont}{\mst@boldvariant@normal}{\mst@greek@lsh}
658     \SetSymbolFont{mtlgrfontupper}{normal}{LGR}
659         {\mst@greekfont}{\mst@series@normal}{\mst@greek@ush}
660     \SetSymbolFont{mtlgrfontupper}{bold}{LGR}
661         {\mst@greekfont}{\mst@boldvariant@bold}{\mst@greek@ush}
662 \else
663 \ifmst@selfGreek
664     \SetSymbolFont{mtselfGreekfont}{normal}{OT1}
665         {\mst@greekfont}{\mst@series@normal}{\mst@greek@ush}
666     \SetSymbolFont{mtselfGreekfont}{bold}{OT1}
667         {\mst@greekfont}{\mst@boldvariant@bold}{\mst@greek@ush}
668 \fi\fi\fi

669 \ifmst@subdued
670 \typeout{** subdued mode will be activated for the normal and bold math versions}
671 \else
672 \typeout{** Latin letters in the normal (resp. bold) math versions are now^^J%
673     ** set up to use the fonts
674 \mst@encoding@normal/\mst@family@normal/\mst@series@normal%
675 (\mst@boldvariant@normal)/\mst@ltshape@normal}
676 \ifmst@LGRgreek\typeout{** Greek letters (\mst@greek@lsh/\mst@greek@ush)
677 will use LGR/\mst@greekfont}
678 \fi
679 \ifmst@nodigits\else\typeout{** Other characters (digits, ...)
680 and \protect\log-like names will be^^J%
681 ** typeset with the \mst@shape@normal\space shape.}
682 \fi
683 \fi
684 \else % optional argument, then we rather do DeclareVersion
685 \edef\mst@tmp{#1}
686 \ifx\mst@tmp@empty
687     \Mathastext % no infinite loop!
688 \else
689     \MTDeclareVersion[\mst@ltsh]{#1}
690         {\mst@enc}{\mst@fam}{\mst@ser}{\mst@opsh}
691 \fi
692 \fi
693 }
694 \@onlypreamble\Mathastext
695 \let\mathastext\Mathastext

```

**\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!

```

696 \newcommand*{\MTDeclareVersion}[6][\@empty]{
697   \edef\mst@version{#2}
698   \DeclareMathVersion{\mst@version}
699   \expandafter\edef\csname mst@encoding@\mst@version\endcsname{#3}
700   \expandafter\edef\csname mst@family@\mst@version\endcsname{#4}
701   \expandafter\edef\csname mst@series@\mst@version\endcsname{#5}
702   \expandafter\edef\csname mst@shape@\mst@version\endcsname{#6}
703   \expandafter\edef\csname mst@boldvariant@\mst@version\endcsname{\mst@bold}
704   \expandafter\edef\csname mst@itdefault@\mst@version\endcsname{\itdefault}
705   \expandafter\edef\csname mst@rmdefault@\mst@version\endcsname{\rmdefault}
706   \expandafter\edef\csname mst@sfdefault@\mst@version\endcsname{\sfdefault}
707   \expandafter\edef\csname mst@ttdefault@\mst@version\endcsname{\ttdefault}
708   \expandafter\edef\csname mst@exists@skip@\mst@version\endcsname
709     {\mst@exists@skip}
710   \expandafter\edef\csname mst@forall@skip@\mst@version\endcsname
711     {\mst@forall@skip}
712   \expandafter\edef\csname mst@prime@skip@\mst@version\endcsname
713     {\mst@prime@skip}
714   \mst@optionalparamfalse
715   \ifx\@empty#1
716     \else % we check nevertheless for [] situation, will not work with [ ]
717       \def\mst@tmp{#1}
718       \ifx\mst@tmp\@empty\else\mst@optionalparamtrue\fi
719     \fi
720   \ifmst@optionalparam
721     \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{#1}
722     \typeout{** Latin letters in math version ‘#2’ will use the font
723       #3/#4/#5/#1~J%
724     ** Other characters (digits, ...) and \protect\log-like
725     names will be in #6 shape.}
726     \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{#1}
727   \else
728     \ifmst@italic
729       \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{\mst@ltsh}
730       \typeout{** Latin letters in math version ‘#2’ will use the font
731         #3/#4/#5/\mst@ltsh~J%
732       ** Other characters (digits, ...) and \protect\log-like names
733       will be in #6 shape.}
734       \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{\mst@ltsh}
735     \else
736       \SetSymbolFont{mtletterfont}{#2}{#3}{#4}{#5}{#6}
737       \typeout{** Latin letters in math version ‘#2’ will use the fonts
738         #3/#4/#5(\mst@bold)/#6}
739       \expandafter\edef\csname mst@ltshape@\mst@version\endcsname{#6}
740     \fi
741   \fi
742   \ifmst@nonormalbold\else

```



```

743 \SetMathAlphabet{\mathnormalbold}{#2}{#3}{#4}{\mst@bold}
744         {\csname
745             mst@ltshape@\mst@version\endcsname}
746 \fi
747 \SetSymbolFont{mtoperatorfont}{#2}{#3}{#4}{#5}{#6}
748 \ifmst@defaultbf\else\SetMathAlphabet{\Mathbf}{#2}{#3}{#4}{\mst@bold}{#6}\fi
749 \ifmst@defaultit\else\SetMathAlphabet{\Mathit}{#2}{#3}{#4}{#5}{\itdefault}\fi
750 \ifmst@defaultsf\else\SetMathAlphabet{\Mathsf}{#2}{#3}{\sfdefault}{#5}{#6}\fi
751 \ifmst@defaulttt\else\SetMathAlphabet{\Mathtt}{#2}{#3}{\ttdefault}{#5}{#6}\fi
752 \ifmst@needeuler
753     \SetMathAlphabet{\MathEulerBold}{#2}{U}{zeur}{\mst@bold}{n}
754 \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.

```

755 \def\mst@greek@lsh@loc{\csname mst@ltshape@\mst@version\endcsname}
756 \def\mst@greek@ush@loc{\csname mst@shape@\mst@version\endcsname}
757 \ifmst@itgreek\def\mst@greek@lsh@loc{\itdefault}
758         \def\mst@greek@ush@loc{\itdefault}\fi
759 \ifmst@upgreek\def\mst@greek@lsh@loc{\updefault}
760         \def\mst@greek@ush@loc{\updefault}\fi
761 \ifmst@frenchmath
762     \ifmst@itgreek\else
763     \ifmst@upgreek\else
764         \def\mst@greek@lsh@loc{\csname mst@shape@\mst@version\endcsname}
765         \def\mst@greek@ush@loc{\csname mst@shape@\mst@version\endcsname}
766     \fi\fi
767 \fi
768 \ifcase\mst@greek@select
769     \or\def\mst@greek@ush@loc{\itdefault}
770     \or\def\mst@greek@ush@loc{\updefault}
771 \fi
772 \ifmst@LGRgreeks
773     \SetSymbolFont{mtlgrfontlower}{#2}{LGR}{#4}{#5}{\mst@greek@lsh@loc}
774     \SetSymbolFont{mtlgrfontupper}{#2}{LGR}{#4}{#5}{\mst@greek@ush@loc}
775     \typeout{** Greek letters (\mst@greek@lsh@loc/\mst@greek@ush@loc) will use
776         LGR font #4}
777 \else
778 \ifmst@selfGreeks
779     \SetSymbolFont{mtselfGreekfont}{#2}{OT1}{#4}{#5}{\mst@greek@ush@loc}
780     \typeout{** Capital Greek letters (\mst@greek@lsh@loc/\mst@greek@ush@loc)
781         will use OT1 font #4}
782 \else
783 \ifmst@LGRgreek
784     \SetSymbolFont{mtlgrfontlower}{#2}{LGR}{\mst@greekfont}{#5}{\mst@greek@lsh@loc}
785     \SetSymbolFont{mtlgrfontupper}{#2}{LGR}{\mst@greekfont}{#5}{\mst@greek@ush@loc}
786     \typeout{** Greek letters (\mst@greek@lsh@loc/\mst@greek@ush@loc) will use

```

```

787     LGR font \mst@greekfont}
788 \else
789 \ifmst@selfGreek
790     \SetSymbolFont{mtselfGreekfont}{#2}{OT1}{\mst@greekfont}{#5}{\mst@greek@ush@loc}
791     \typeout{** Capital Greek letters (\mst@greek@lsh@loc/\mst@greek@ush@loc)
792     will use OT1 font \mst@greekfont}
793 \fi\fi\fi\fi
794 %\mst@font@info@on
795 }
796 \@onlypreamble\MTDeclareVersion

797 \let\MathastextDeclareVersion\MTDeclareVersion

```

**\MTVersion** This is a wrapper around L<sup>A</sup>T<sub>E</sub>X'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.)

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...

```

798 \newcommand*{\MTVersion}[2][\@empty]{%
799     \mathversion{#2}%
800     \ifx\@empty#1% no optional argument
801         \def\mst@tmp{#2}%
802     \else% we check nevertheless for [] situation, will not work with [ ]
803         \def\mst@tmpa{#1}%
804         \ifx\mst@tmpa\@empty\def\mst@tmp{#2}%
805         \else\def\mst@tmp{#1}%
806         \fi%
807     \fi%
808     \usefont{\csname mst@encoding@\mst@tmp\endcsname}%
809         {\csname mst@family@\mst@tmp\endcsname}%
810         {\csname mst@series@\mst@tmp\endcsname}%
811         {\csname mst@shape@\mst@tmp\endcsname}%
812     \edef\mst@@encoding{\csname mst@encoding@\mst@tmp\endcsname}%
813     \renewcommand{\encodingdefault}{\mst@@encoding}%
814 % some modifications for v1.15b
815     \edef\mst@@famdefault{\csname mst@family@\mst@tmp\endcsname}%
816     \renewcommand{\familydefault}{\mst@@famdefault}%
817     \edef\mst@@series{\csname mst@series@\mst@tmp\endcsname}%
818     \renewcommand{\mddefault}{\mst@@series}%
819     \edef\mst@@shape{\csname mst@shape@\mst@tmp\endcsname}%
820     \renewcommand{\shapedefault}{\mst@@shape}%
821     \edef\mst@@boldvariant{\csname mst@boldvariant@\mst@tmp\endcsname}%

```

```

822     \renewcommand{\bfdefault}{\mst@boldvariant}%
823     \edef\mst@itdefault{\csname mst@itdefault@mst@tmp\endcsname}%
824     \renewcommand{\itdefault}{\mst@itdefault}%
825     \edef\mst@rmdefault{\csname mst@rmdefault@mst@tmp\endcsname}%
826     \renewcommand{\rmdefault}{\mst@rmdefault}%
827     \edef\mst@sfdefault{\csname mst@sfdefault@mst@tmp\endcsname}%
828     \renewcommand{\sfdefault}{\mst@sfdefault}%
829     \edef\mst@ttdefault{\csname mst@ttdefault@mst@tmp\endcsname}%
830     \renewcommand{\ttdefault}{\mst@ttdefault}%
831     \edef\mst@tmp{#2}%
832 %% v1.15e: muskips
833     \expandafter
834     \mst@exists@muskip\csname mst@exists@skip@mst@tmp\endcsname\relax
835     \expandafter
836     \mst@forall@muskip\csname mst@forall@skip@mst@tmp\endcsname\relax
837 %% v1.2: muskip for \cs{prime}
838     \expandafter
839     \mst@prime@muskip\csname mst@prime@skip@mst@tmp\endcsname\relax
840 %% v1.2b: italic corrections except for italic/slanted (sic) letters, and of
841 %% course except in the subdued normal and bold math versions
842     \edef\mst@tmpa{\csname mst@ltshape@mst@tmp\endcsname}%
843     \edef\mst@tmpb{\csname mst@shape@mst@tmp\endcsname}%
844     \MTicinmath
845     \@for\mst@tmp:=it,sl\do{\ifx\mst@tmp\mst@tmpa\MTnoicinmath\fi}%
846     \ifmst@frenchmath
847         \MTICinmath
848         \@for\mst@tmp:=it,sl\do{\ifx\mst@tmp\mst@tmpb\MTnoICinmath\fi}%
849     \fi
850 %% v1.15c: extending subdued to LGRgreek
851 %% v1.15f: subdueing math alphabets in a simpler way than in 1.15e
852 %% v1.2b: subdueing the activation of characters in math mode
853 %% v1.2d: special treatment of the asterisk
854     \MTmathoperatorsobeymathxx
855     \MTeasyonlettersobeymathxx
856     \ifmst@asterisk\let\mst@doasterisk\mst@@doasterisk\fi
857     \ifmst@subdued
858         \edef\mst@tmp{#2}\def\mst@tmpa{normal}%
859         \ifx\mst@tmp\mst@tmpa
860             \mst@restorealphabets
861             \MTmathoperatorsdonotobeymathxx
862             \MTnonlettersdonotobeymathxx
863             \MTeasyonlettersdonotobeymathxx
864             \MTnoicinmath
865             \ifmst@asterisk\let\mst@doasterisk\relax\fi
866             \ifmst@LGRgreek\mst@restoregreek\fi
867         \else
868             \def\mst@tmpa{bold}%
869             \ifx\mst@tmp\mst@tmpa
870                 \mst@restorealphabets

```

```

871      \MTmathoperatorsdonotobeymathxx
872      \MTnonlettersdonotobeymathxx
873      \MTeasynonlettersdonotobeymathxx
874      \MTnoicinmath
875      \ifmst@asterisk\let\mst@doasterisk\relax\fi
876      \ifmst@LGRgreek\mst@restoregreek\fi
877      \else
878      \mst@setalphabets
879      \ifmst@LGRgreek\mst@setuplrgreek\fi
880      \fi\fi\fi
881 }
882 \let\MathastextVersion\MTVersion
883 \let\Mathastextversion\MTVersion
884 \let\MTversion\MTVersion
885 \let\mathastextversion\MTVersion

```

\Mathastext Initialization call:

```
886 \Mathastext
```

Additional appropriate messages to the terminal and the log.

```

887 \ifmst@eulergreek
888     \typeout{** Greek letters will use the Euler font. Use^^J%
889 ** \protect\MathastextEulerScale{<factor>} to scale the font.}
890 \else
891 \ifmst@symbolgreek
892     \typeout{** Greek letters will use the PostScript Symbol font. Use^^J%
893 ** \protect\MathastextSymbolScale{<factor>} to scale the font.}
894 \fi\fi

```

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 uses \mathcode'x="8000 to insert the italic corrections after letters.

```

895 \def\mst@DeclareMathSymbol#1#2#3#4{%
896     \DeclareMathSymbol{#1}{#2}{#3}{#4}
897     \expandafter\DeclareMathSymbol\csname mst@#1\endcsname{#2}{#3}{#4}
898     \expandafter\mst@addtodo@az
899     \expandafter#1\csname mst@#1\endcsname\mst@itcorr}
900 \mst@DeclareMathSymbol{a}{\mathalpha}{mtletterfont}{‘a}
901 \mst@DeclareMathSymbol{b}{\mathalpha}{mtletterfont}{‘b}
902 \mst@DeclareMathSymbol{c}{\mathalpha}{mtletterfont}{‘c}
903 \mst@DeclareMathSymbol{d}{\mathalpha}{mtletterfont}{‘d}
904 \mst@DeclareMathSymbol{e}{\mathalpha}{mtletterfont}{‘e}
905 \mst@DeclareMathSymbol{f}{\mathalpha}{mtletterfont}{‘f}
906 \mst@DeclareMathSymbol{g}{\mathalpha}{mtletterfont}{‘g}
907 \mst@DeclareMathSymbol{h}{\mathalpha}{mtletterfont}{‘h}
908 \mst@DeclareMathSymbol{i}{\mathalpha}{mtletterfont}{‘i}
909 \mst@DeclareMathSymbol{j}{\mathalpha}{mtletterfont}{‘j}
910 \mst@DeclareMathSymbol{k}{\mathalpha}{mtletterfont}{‘k}
911 \mst@DeclareMathSymbol{l}{\mathalpha}{mtletterfont}{‘l}
912 \mst@DeclareMathSymbol{m}{\mathalpha}{mtletterfont}{‘m}

```

```

913 \mst@DeclareMathSymbol{n}{\mathalpha}{mtletterfont}{'n}
914 \mst@DeclareMathSymbol{o}{\mathalpha}{mtletterfont}{'o}
915 \mst@DeclareMathSymbol{p}{\mathalpha}{mtletterfont}{'p}
916 \mst@DeclareMathSymbol{q}{\mathalpha}{mtletterfont}{'q}
917 \mst@DeclareMathSymbol{r}{\mathalpha}{mtletterfont}{'r}
918 \mst@DeclareMathSymbol{s}{\mathalpha}{mtletterfont}{'s}
919 \mst@DeclareMathSymbol{t}{\mathalpha}{mtletterfont}{'t}
920 \mst@DeclareMathSymbol{u}{\mathalpha}{mtletterfont}{'u}
921 \mst@DeclareMathSymbol{v}{\mathalpha}{mtletterfont}{'v}
922 \mst@DeclareMathSymbol{w}{\mathalpha}{mtletterfont}{'w}
923 \mst@DeclareMathSymbol{x}{\mathalpha}{mtletterfont}{'x}
924 \mst@DeclareMathSymbol{y}{\mathalpha}{mtletterfont}{'y}
925 \mst@DeclareMathSymbol{z}{\mathalpha}{mtletterfont}{'z}
926 \ifmst@frenchmath\def\mst@font@tbu{moperatorfont}
927 \else\def\mst@font@tbu{mtletterfont}\fi
928 \def\mst@DeclareMathSymbol#1#2#3#4{%
929   \DeclareMathSymbol{#1}{#2}{#3}{#4}
930   \expandafter\DeclareMathSymbol\csname mst@#1\endcsname{#2}{#3}{#4}
931   \expandafter\mst@addtodo@AZ
932   \expandafter#1\csname mst@#1\endcsname\mst@ITcorr}
933 \mst@DeclareMathSymbol{A}{\mathalpha}{\mst@font@tbu}{'A}
934 \mst@DeclareMathSymbol{B}{\mathalpha}{\mst@font@tbu}{'B}
935 \mst@DeclareMathSymbol{C}{\mathalpha}{\mst@font@tbu}{'C}
936 \mst@DeclareMathSymbol{D}{\mathalpha}{\mst@font@tbu}{'D}
937 \mst@DeclareMathSymbol{E}{\mathalpha}{\mst@font@tbu}{'E}
938 \mst@DeclareMathSymbol{F}{\mathalpha}{\mst@font@tbu}{'F}
939 \mst@DeclareMathSymbol{G}{\mathalpha}{\mst@font@tbu}{'G}
940 \mst@DeclareMathSymbol{H}{\mathalpha}{\mst@font@tbu}{'H}
941 \mst@DeclareMathSymbol{I}{\mathalpha}{\mst@font@tbu}{'I}
942 \mst@DeclareMathSymbol{J}{\mathalpha}{\mst@font@tbu}{'J}
943 \mst@DeclareMathSymbol{K}{\mathalpha}{\mst@font@tbu}{'K}
944 \mst@DeclareMathSymbol{L}{\mathalpha}{\mst@font@tbu}{'L}
945 \mst@DeclareMathSymbol{M}{\mathalpha}{\mst@font@tbu}{'M}
946 \mst@DeclareMathSymbol{N}{\mathalpha}{\mst@font@tbu}{'N}
947 \mst@DeclareMathSymbol{O}{\mathalpha}{\mst@font@tbu}{'O}
948 \mst@DeclareMathSymbol{P}{\mathalpha}{\mst@font@tbu}{'P}
949 \mst@DeclareMathSymbol{Q}{\mathalpha}{\mst@font@tbu}{'Q}
950 \mst@DeclareMathSymbol{R}{\mathalpha}{\mst@font@tbu}{'R}
951 \mst@DeclareMathSymbol{S}{\mathalpha}{\mst@font@tbu}{'S}
952 \mst@DeclareMathSymbol{T}{\mathalpha}{\mst@font@tbu}{'T}
953 \mst@DeclareMathSymbol{U}{\mathalpha}{\mst@font@tbu}{'U}
954 \mst@DeclareMathSymbol{V}{\mathalpha}{\mst@font@tbu}{'V}
955 \mst@DeclareMathSymbol{W}{\mathalpha}{\mst@font@tbu}{'W}
956 \mst@DeclareMathSymbol{X}{\mathalpha}{\mst@font@tbu}{'X}
957 \mst@DeclareMathSymbol{Y}{\mathalpha}{\mst@font@tbu}{'Y}
958 \mst@DeclareMathSymbol{Z}{\mathalpha}{\mst@font@tbu}{'Z}
959 %%
960 \ifmst@nodigits\else
961 \def\mst@font@tbu{moperatorfont}

```

In version 1.1, we have now separated digits from letters, so paradoxically it is less problematic to give them the `mathalpha` type.

```

962 \ifmst@symboldigits \def\mst@font@tbu{mtpsymbol} \fi
963 \ifmst@eulerdigits \def\mst@font@tbu{mteulervm} \fi
964 \DeclareMathSymbol{0}{\mathalpha}{\mst@font@tbu}{‘0}
965 \DeclareMathSymbol{1}{\mathalpha}{\mst@font@tbu}{‘1}
966 \DeclareMathSymbol{2}{\mathalpha}{\mst@font@tbu}{‘2}
967 \DeclareMathSymbol{3}{\mathalpha}{\mst@font@tbu}{‘3}
968 \DeclareMathSymbol{4}{\mathalpha}{\mst@font@tbu}{‘4}
969 \DeclareMathSymbol{5}{\mathalpha}{\mst@font@tbu}{‘5}
970 \DeclareMathSymbol{6}{\mathalpha}{\mst@font@tbu}{‘6}
971 \DeclareMathSymbol{7}{\mathalpha}{\mst@font@tbu}{‘7}
972 \DeclareMathSymbol{8}{\mathalpha}{\mst@font@tbu}{‘8}
973 \DeclareMathSymbol{9}{\mathalpha}{\mst@font@tbu}{‘9}
974 \fi

```

When `symboldelimiters` is passed as an option, we use the Symbol font for the printable characters other than letters and digits.

```

975 \ifmst@symboldelimiters
976 \def\mst@font@tbu{mtpsymbol}
977 \mst@endashfalse
978 \mst@emdashfalse
979 \else
980 \def\mst@font@tbu{mtooperatorfont}
981 \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`.

```

982 \ifmst@noexclam\else\typeout{** \string! and \string?}
983 \DeclareMathSymbol{!}{\mathclose}{\mst@font@tbu}{"21}
984 \DeclareMathSymbol{\mst@varfam@exclam}{\mathalpha}{\mst@font@tbu}{"21}
985 \expandafter\mst@addtodo@nonletters\string!\mathclose\mst@varfam@exclam
986 \DeclareMathSymbol{?}{\mathclose}{\mst@font@tbu}{"3F}
987 \DeclareMathSymbol{\mst@varfam@question}{\mathalpha}{\mst@font@tbu}{"3F}
988 \expandafter\mst@addtodo@nonletters\string?\mathclose\mst@varfam@question
989 \fi

```

**\MTast** 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 have optionally `*` and `\ast` also 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`!

```

990 \def\mst@@doasterisk{\let\ast\mst@ast

```

```

991      \expandafter\let\csname mst@ifdone*\endcsname\iffalse
992      \mst@mathactivate*{\mst@ast} % for the order cf. \mst@do@activecase
993 \ifmst@asterisk\typeout{** asterisk: \string\ast\space and *}
994 \ifmst@symbolmisc
995   \def\mst@bin@ast{%
996     \mathbin{\mathchoice{\raisebox{-.1\height}
997       {\the\textfont\symmtpsymbol\char42}}
998       {\raisebox{-.1\height}
999         {\the\textfont\symmtpsymbol\char42}}
1000       {\raisebox{-.1\height}
1001         {\the\scriptfont\symmtpsymbol\char42}}
1002       {\raisebox{-.1\height}
1003         {\the\scriptscriptfont\symmtpsymbol\char42}}}}
1004 \else
1005   \def\mst@bin@ast{%
1006     \mathbin{\mathchoice{\raisebox{-.1\mst@lowerast}
1007       {\the\textfont\symmtooperatorfont\char42}}
1008       {\raisebox{-.1\mst@lowerast}
1009         {\the\textfont\symmtooperatorfont\char42}}
1010       {\raisebox{-.1\mst@lowerast}
1011         {\the\scriptfont\symmtooperatorfont\char42}}
1012       {\raisebox{-.1\mst@lowerast}
1013         {\the\scriptscriptfont\symmtooperatorfont\char42}}}}
1014 \fi
1015 \def\mst@varfam@ast{\ifnum\fam=\m@ne\mst@bin@ast\else
1016   \mathbin{\mathchoice{\raisebox{-.1\mst@lowerast}
1017     {\the\textfont\fam\char42}}
1018     {\raisebox{-.1\mst@lowerast}
1019       {\the\textfont\fam\char42}}
1020     {\raisebox{-.1\mst@lowerast}
1021       {\the\scriptfont\fam\char42}}
1022     {\raisebox{-.1\mst@lowerast}
1023       {\the\scriptscriptfont\fam\char42}}}\fi}
1024 \let\mst@doasterisk\mst@@doasterisk
1025 \DeclareRobustCommand*\mst@ast{\mst@bin@ast}
1026 \newcommand*{\MTlowerast[1]{\def\mst@lowerast{#1}}
1027 \MTlowerast{.3\height}
1028 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters
1029   \expandafter\def\csname mst@ast \endcsname{\mst@varfam@ast}}
1030 \fi

```

(2011) I renounced to try to do things with all the various dots, they are defined in many different ways, and there is the amsmath also. Dealing with this issue would mean a lot a time for a minuscule result. Better to leave the user use the `mathdots` package and accept that we can not avoid the default fonts in that case. So here I just treat `.` (in the hope to really lessen by 1 the number of fonts embedded at the end in the PDF).

[(Dec. 2012) should I reexamine these definitive sounding remarks?]

```

1031 \ifmst@nopunct\else\typeout{** punctuation\string: \string, \string. \string: \string; and
1032 \DeclareMathSymbol{,}{\mathpunct}{\mst@font@tbu}{"2C}

```

```

1033 \DeclareMathSymbol{\mst@varfam@comma}{\mathalpha}{\mst@font@tbu}{ "2C}
1034 \expandafter\mst@addtodo@nonletters\string,\mathpunct\mst@varfam@comma
1035 \DeclareMathSymbol{.}{\mathord}{\mst@font@tbu}{ "2E}
1036 \DeclareMathSymbol{\mst@varfam@dot}{\mathalpha}{\mst@font@tbu}{ "2E}
1037 \mst@addtodo@easynonletters\.\mst@varfam@dot
1038 \DeclareMathSymbol{:}{\mathrel}{\mst@font@tbu}{ "3A} % relation spacing
1039 \DeclareMathSymbol{\mst@varfam@colon}{\mathalpha}{\mst@font@tbu}{ "3A}
1040 \expandafter\mst@addtodo@nonletters\string:\mathrel\mst@varfam@colon
1041 \@ifpackageloaded{amsmath}
1042 {} % \colon defined in amsmath.sty in terms of : with some enlarged explicit
1043 % spacing. No need to intervene.
1044 {% no amsmath, use standard punctuation spacing
1045 % \let\colon\undefined
1046 % the reason is if some package has redefined \colon which then
1047 % could not be used in \cs{DeclareMathSymbol} anymore.
1048 \DeclareMathSymbol{\colon}{\mathpunct}{\mst@font@tbu}{ "3A}
1049 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1050 \def\colon{\mathpunct{\mst@varfam@colon}}}}
1051 \DeclareMathSymbol{;}{\mathpunct}{\mst@font@tbu}{ "3B}
1052 \DeclareMathSymbol{\mst@varfam@pointvirgule}{\mathalpha}{\mst@font@tbu}{ "3B}
1053 \expandafter\mst@addtodo@nonletters\string;\mathpunct\mst@varfam@pointvirgule
1054 \fi

```

`\relbar` Due to the way `=` and `-` are used by L<sup>A</sup>T<sub>E</sub>X 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 XeTeX, not for LuaLatex. Also I do my modifications to `\relbar` in a manner testing for the presence of amsmath.

```

1055 \ifmst@nominus\else
1056 \ifmst@XeTeX
1057 \XeTeXmathcharnumdef\mst@minus@sign=\XeTeXmathcodenum'\-\relax
1058 \else
1059 \ifmst@LuaTeX
1060 %% \luatexUmathcharnumdef\mst@minus@sign=\luatexUmathcodenum'\-\relax ne
1061 %% marche pas pour le moment car \luatexUmathcodenum retourne parfois un
1062 %% legacy mathcode, parfois un Unicode mathcode, \a mon avis c'est un bug
1063 %% de LuaLatex. En fait Taco H me dit que la prochaine version
1064 %% r\eglera ce probl\eme. \luatexUmathchardef\mst@minus@sign="2 "2 "0\relax
1065 \mathchardef\mst@minus@sign=8704\relax % "2200
1066 \else
1067 \mathchardef\mst@minus@sign=\mathcode'\-\relax
1068 \fi\fi
1069 \@ifpackageloaded{amsmath}
1070 {\def\relbar{\mathrel{\mathpalette\mathsm@sh\mst@minus@sign}}}
1071 {\DeclareRobustCommand\relbar{\mathrel{\smash\mst@minus@sign}}}
1072 \def\rightarrowfill{${\m@th\mathord{\relbar}}\mkern-7mu%
1073 \cleaders\hbox{${\mkern-2mu\relbar\mkern-2mu$}}\hfill
1074 \mkern-7mu\mathord{\rightarrow}$}

```



```

1075 \def\leftarrowfill{${\m@th\mathord\leftarrow\mkern-7mu%
1076 \cleaders\hbox{${\mkern-2mu\relbar\mkern-2mu$}}\hfill
1077 \mkern-7mu\mathord{\relbar}$}
1078 \fi

endash 2011/01/29, 1.1: Producing this next piece of code was not a piece of cake for a novice like
        myself!
        2011/02/05, 1.11: Compatibility with Unicode (via use of fontspec encodings EU1 and EU2)
        2011/02/07, 1.12: Improved dealing of Unicode possibility.
        2011/04/02, 1.14b: Corrected some very irresponsible bug in the Unicode part which caused a
        problem when 10 or more math families have been allocated.
        2012/09/24, 1.15: Added AtBeginDocument to circumvent some amsmath problem with unicode
        engines.

1079 \def\do@the@endashstuff{\edef\mst@tmp@enc{\encodingdefault}
1080 \ifx\mst@tmp@enc\mst@eui % xetex+fontspec
1081 \AtBeginDocument{\XeTeXmathcode'\-="2 \symmoperatorfont "2013\relax}
1082 \AtBeginDocument{\XeTeXmathchardef\mst@varfam@minus="7 \symmoperatorfont "2013\re-
    lax}
1083 \else
1084 \ifx\mst@tmp@enc\mst@euii % luatex+fontspec
1085 \AtBeginDocument{\luatexUmathcode'\-="2 \symmoperatorfont "2013\relax}
1086 \AtBeginDocument{\luatexUmathchardef\mst@varfam@minus="7 \symmoperatorfont "2013\re-
    lax}
1087 \else
1088 \ifx\mst@tmp@enc\mst@ti % T1
1089 \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{21}
1090 \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{21}
1091 \else
1092 \ifx\mst@tmp@enc\mst@oti % OT1
1093 \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{123}
1094 \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{123}
1095 \else
1096 \ifx\mst@tmp@enc\mst@lyi % LY1
1097 \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{150}
1098 \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{150}
1099 \else % make sure we have neither xetex nor luatex
1100 \ifmst@XeTeX\mst@aborttrue\else\ifmst@LuaTeX\mst@aborttrue\else
1101 \DeclareMathSymbol{-}{\mathbin}{moperatorfont}
1102 \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}
1103 {\expandafter\the\expandafter\csname\mst@tmp@enc\string\textendash\endcsname}
1104 \fi\fi
1105 \fi\fi\fi\fi\fi}
1106 \def\do@the@emdashstuff{\edef\mst@tmp@enc{\encodingdefault}
1107 \ifx\mst@tmp@enc\mst@eui % xetex+fontspec
1108 \AtBeginDocument{\XeTeXmathcode'\-="2 \symmoperatorfont "2014\relax}
1109 \AtBeginDocument{\XeTeXmathchardef\mst@varfam@minus="7 \symmoperatorfont "2014\re-
    lax}
1110 \else
1111 \ifx\mst@tmp@enc\mst@euii % luatex+fontspec

```

```

1112 \AtBeginDocument{\luatexUmathcode'\-="2 \symmoperatorfont "2014\relax}
1113 \AtBeginDocument{\luatexUmathchardef\mst@varfam@minus="7 \symmoperatorfont "2014\re-
    lax}
1114 \else
1115   \ifx\mst@tmp@enc\mst@ti % T1
1116     \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{22}
1117     \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{22}
1118   \else
1119     \ifx\mst@tmp@enc\mst@oti % OT1
1120       \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{124}
1121       \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{124}
1122     \else
1123       \ifx\mst@tmp@enc\mst@lyi % LY1
1124         \DeclareMathSymbol{-}{\mathbin}{moperatorfont}{151}
1125         \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}{151}
1126       \else % make sure we have neither xetex nor luatex
1127         \ifmst@XeTeX\mst@aborttrue\else\ifmst@LuaTeX\mst@aborttrue\else
1128           \DeclareMathSymbol{-}{\mathbin}{moperatorfont}
1129           \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{moperatorfont}
1130         {\expandafter\the\expandafter\csname\mst@tmp@enc\string\textendash\endcsname}
1131         \fi\fi
1132       \fi\fi\fi\fi\fi}
1133 \ifmst@nominus\else\typeout{** minus as endash}
1134 \mst@abortfalse
1135 \ifmst@endash\do@the@endashstuff\else
1136 \ifmst@emdash\do@the@emdashstuff\else
1137   \DeclareMathSymbol{-}{\mathbin}{\mst@font@tbu}{"2D}
1138   \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{\mst@font@tbu}{"2D}
1139 \fi\fi
1140 \ifmst@abort
1141   \DeclareMathSymbol{-}{\mathbin}{\mst@font@tbu}{"2D}
1142   \DeclareMathSymbol{\mst@varfam@minus}{\mathalpha}{\mst@font@tbu}{"2D}
1143 \fi
1144 \expandafter\mst@addtodo@nonletters\string-\mathbin\mst@varfam@minus
1145 \fi

```

\hbar 2011/01/31, 1.1 I decide to settle the question of the \hbar. First, the L<sup>A</sup>T<sub>E</sub>X definition

```
\mst@ltbar 1146 %%\def\hbar{\mathchar'26\mkern-9mu\h} % (original definition from latex.ltx)
```

Well, the fact is that there is a \DeclareMathSymbol in amsfonts.sty, so I can not always rely on the original which had the advantage that at least h would be in the correct font. But of course not the macron character (\=, \bar). And there is also the issue of the kern whose length is given in a way which depends on cmsy (18mu=1em and em taken from info in cmsy). The first problem is that I don't know how to get the slot position of the macron, given the encoding. So I found another way. 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... )

```
1147 %
```

```

1148 \def\mst@mathrlap{\mathpalette\mst@mathrlapinternal}
1149 \def\mst@mathrlapinternal#1#2{\rlap{$\mathsurround=0pt#1{#2}$}}
1150 \def\do@the@hbarstuff{\edef\mst@tmp@enc{\encodingdefault}
1151 \ifx\mst@tmp@enc\mst@eui % xetex and unicode font
1152 \XeTeXmathchardef\hbar="7 \symmtletterfont "0127 \relax
1153 \else
1154 \ifx\mst@tmp@enc\mst@euii % luatex and unicode font
1155 \luatexUmathchardef\hbar="7 \symmtletterfont "0127 \relax %% or 210F?
1156 \else % I must leave open the T1, OT1 possibility also for XeTeX or LuaTeX
1157 \ifx\mst@ti\mst@tmp@enc
1158 \DeclareMathAccent{\mst@ltbar}{\mathalpha}{mtletterfont}{9}
1159 \else %% assume OT1. Bad idea? Should not provoke an error anyhow
1160 \DeclareMathAccent{\mst@ltbar}{\mathalpha}{mtletterfont}{22}
1161 \fi
1162 \def\hbar{\mst@mathrlap{\mst@ltbar{\ }h}}
1163 \fi\fi}
1164 \ifmst@nohbar\else\typeout{** \string\hbar}\do@the@hbarstuff\fi

```

As `h` is from `mtletterfont`, the accent `\mst@ltbar` is the `\bar` accent from that same font. Of course, if the user defines math versions with other encodings than the default one when loading the package this will probably not work there (if I knew how to do for accents what I did for the endash I could do it for all encodings. Surely easy for a `TeXpert`.) Not to mention if he/she changes the letter shape... one never should give so much freedom to users ;-). Well this construction gives an acceptable result for some of the fonts I have tested, whether upright or in italics.

1.15d: Oct 13, 2012. The `\mathcode` thing with `=` is (belatedly, sorry!) made Unicode compatible.

`+,=\,\Relbar`

```

1165 \ifmst@noplus\else\typeout{** \string+ and \string=}
1166 \DeclareMathSymbol{+}{\mathbin}{\mst@font@tbu}{2B}
1167 \DeclareMathSymbol{\mst@varfam@plus}{\mathalpha}{\mst@font@tbu}{2B}
1168 \expandafter\mst@addtodo@nonletters\string+\mathbin\mst@varfam@plus
1169 \fi
1170 \ifmst@noequal\else
1171 \ifmst@XeTeX
1172 \XeTeXmathcharnumdef\mst@equal@sign=\XeTeXmathcodenum'\=\relax
1173 \else
1174 \ifmst@LuaTeX
1175 %% 12 octobre 2012 \luatexUmathcodenum'\=
1176 %% ne marche pas pour le moment \'a cause du fait que \luatexUmathcodenum
1177 %% donne un mathcode sur 8bit ou un Unicode mathcode sans qu'on puisse
1178 %% savoir lequel
1179 %% \luatexUmathchardef\mst@equal@sign="3 "0 "3D\relax
1180 \mathchardef\mst@equal@sign=12349\relax
1181 \else
1182 \mathchardef\mst@equal@sign=\mathcode'\=\relax
1183 \fi\fi
1184 \@ifpackageloaded{amsmath}
1185 {\def\Relbar{\mathrel\mst@equal@sign}}

```

\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 T<sub>E</sub>X does not look at the `mathcode` inside a `\csname...\endcsname`. Example:

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`.

```

1189 \typeout{** adding \string= \string; and \string+ to \string\nfss@catcodes}
1190 \g@addto@macro\nfss@catcodes{%
1191   \@makeoother\=%
1192   \@makeoother\;%
1193   \@makeoother\+%
1194 }
1195 \expandafter\mst@addtodo@nonletters\string=\mathrel\mst@varfam@equal
1196 \fi

```

```

1197 \ifmst@noparen\else\typeout{** parentheses \string( \string) \string[ \string] and slash \s
1198 \ifmst@nosmalldelims
1199     \DeclareMathSymbol{\{}{\mathopen}{\mst@font@tbu}{28}
1200     \DeclareMathSymbol{\}}{\mathclose}{\mst@font@tbu}{29}
1201     \DeclareMathSymbol{\[]{\mathopen}{\mst@font@tbu}{5B}
1202     \DeclareMathSymbol{\]}{\mathclose}{\mst@font@tbu}{5D}
1203     \DeclareMathSymbol{\!/}{\mathord}{\mst@font@tbu}{2F}
1204 \else
1205     \DeclareMathDelimiter{\{}{\mathopen}{\mst@font@tbu}{28}{largesymbols}{00}
1206     \DeclareMathDelimiter{\}}{\mathclose}{\mst@font@tbu}{29}{largesymbols}{01}
1207     \DeclareMathDelimiter{\[]{\mathopen}{\mst@font@tbu}{5B}{largesymbols}{02}

```

```

1208 \DeclareMathDelimiter{}{\mathclose}{\mst@font@tbu}{5D}{largesymbols}{03}
1209 \DeclareMathDelimiter{/}{\mathord}{\mst@font@tbu}{2F}{largesymbols}{0E}
1210 \fi
1211 \DeclareMathSymbol{\mst@varfam@lparen}{\mathalpha}{\mst@font@tbu}{40}
1212 \DeclareMathSymbol{\mst@varfam@rparen}{\mathalpha}{\mst@font@tbu}{41}
1213 \DeclareMathSymbol{\mst@varfam@lbrack}{\mathalpha}{\mst@font@tbu}{5B}
1214 \DeclareMathSymbol{\mst@varfam@rbrack}{\mathalpha}{\mst@font@tbu}{5D}
1215 \DeclareMathSymbol{\mst@varfam@slash}{\mathalpha}{\mst@font@tbu}{2F}
1216 \expandafter\mst@addtodo@nonletters\string(\mathopen\mst@varfam@lparen
1217 \expandafter\mst@addtodo@nonletters\string)\mathclose\mst@varfam@rparen
1218 \expandafter\mst@addtodo@nonletters\string[\mathopen\mst@varfam@lbrack
1219 \expandafter\mst@addtodo@nonletters\string]\mathclose\mst@varfam@rbrack
1220 \mst@addtodo@easynonletters\/\mst@varfam@slash
1221 \fi

```

alldelims

```

<,>,\ 1222 \ifmst@alldelims\typeout{** alldelims: \string< \string>
\setminus 1223 \string\backslash\space\string\setminus\space|
\backslash 1224 \string\vert\space\string\mid\space\string\{\space and \string\}}
1225 \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`.

```

1226 \DeclareMathDelimiter{\mst@varfam@backslash}
1227 {\mathalpha}{symbols}{6E}{largesymbols}{0F}
1228 \else
1229 \DeclareMathDelimiter{<}{\mathopen}{\mst@font@tbu}{3C}{largesymbols}{0A}
1230 \DeclareMathDelimiter{>}{\mathclose}{\mst@font@tbu}{3E}{largesymbols}{0B}

```

There is no backslash in the Symbol font hence `mtoperatorfont` here.

```

1231 \expandafter\DeclareMathDelimiter\backslashchar
1232 {\mathord}{mtoperatorfont}{5C}{largesymbols}{0F}
1233 \DeclareMathDelimiter{\backslash}
1234 {\mathord}{mtoperatorfont}{5C}{largesymbols}{0F}
1235 \DeclareMathDelimiter{\mst@varfam@backslash}
1236 {\mathalpha}{mtoperatorfont}{5C}{largesymbols}{0F}
1237 \fi
1238 \DeclareMathSymbol{<}{\mathrel}{\mst@font@tbu}{3C}
1239 \DeclareMathSymbol{>}{\mathrel}{\mst@font@tbu}{3E}
1240 \DeclareMathSymbol{\mst@varfam@less}{\mathalpha}{\mst@font@tbu}{3C}
1241 \DeclareMathSymbol{\mst@varfam@more}{\mathalpha}{\mst@font@tbu}{3E}
1242 \expandafter\mst@addtodo@nonletters\string<\mathrel\mst@varfam@less
1243 \expandafter\mst@addtodo@nonletters\string>\mathrel\mst@varfam@more
1244 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters
1245 \let\backslash\mst@varfam@backslash}
1246 \DeclareMathSymbol{\setminus}{\mathbin}{mtoperatorfont}{5C}
1247 \DeclareMathSymbol{\mst@varfam@setminus}{\mathalpha}{mtoperatorfont}{5C}

```

```

1248 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1249         \def\setminus{\mathbin{\mst@varfam@setminus}}}

\models 1.15d: 13 oct 2012. Before modifying | we must preserve \models.
1250 \ifmst@XeTeX
1251 \XeTeXmathcharnumdef\mst@vert@bar=\XeTeXmathcodenum'\|\relax
1252 \else
1253 \ifmst@LuaTeX
1254 %% \luatexUmathchardef\mst@vert@bar="0 "2 "006A\relax
1255 \mathchardef\mst@vert@bar=618\relax
1256 \else\mathchardef\mst@vert@bar=\mathcode'\|\relax
1257 \fi\fi
1258 \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.
1259 \ifmst@nosmallldelims
1260     \DeclareMathSymbol{|}{\mathord}{\mst@font@tbu}{124}
1261 \else
1262     \DeclareMathDelimiter{|}{\mathord}{\mst@font@tbu}{124}{largesymbols}{"0C}
1263 \fi
1264 \def\vert{|}
1265 \DeclareMathSymbol{\mst@varfam@vbar}{\mathalpha}{\mst@font@tbu}{124}
1266 \mst@addtodo@easynonletters\|\mst@varfam@vbar
1267 \DeclareMathSymbol{\mid}{\mathrel}{\mst@font@tbu}{124}
1268 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1269     \def\mid{\mathrel\mst@varfam@vbar}}

\MTexplicitbraces- Braces. With version 1.2, \{ and \} will not be acceptable as delimiters anymore if the redefi-
obeymathxx        nitions below in \mst@dobraces are enacted. But they will obey math alphabets. Improvements
\MTexplicitbraces- in 1.2a, to preserve robustness.
donotobeymathxx
1270 \ifmst@nosmallldelims
1271     \DeclareMathSymbol{\lbrace}{\mathopen}{\mst@font@tbu}{123}
1272     \DeclareMathSymbol{\rbrace}{\mathclose}{\mst@font@tbu}{125}
1273 \else
1274     \DeclareMathDelimiter{\lbrace}
1275         {\mathopen}{\mst@font@tbu}{123}{largesymbols}{"08}
1276     \DeclareMathDelimiter{\rbrace}
1277         {\mathclose}{\mst@font@tbu}{125}{largesymbols}{"09}
1278 \fi
1279 \DeclareMathSymbol{\mst@varfam@lbrace}{\mathalpha}{\mst@font@tbu}{123}
1280 \DeclareMathSymbol{\mst@varfam@rbrace}{\mathalpha}{\mst@font@tbu}{125}
1281 \DeclareRobustCommand*\mst@lbrace
1282     {\ifmmode\mathopen\mst@varfam@lbrace\else\textbraceleft\fi}
1283 \DeclareRobustCommand*\mst@rbrace
1284     {\ifmmode\mathclose\mst@varfam@rbrace\else\textbraceright\fi}
1285 \mst@do@nonletters\expandafter{\the\mst@do@nonletters
1286     \mst@dobraces{\let\{\mst@lbrace\let\}\mst@rbrace}}
1287 \fi % end of \ifmst@alldelims

```

```

1288 \newcommand*{\MTexplicitbracesobeymathxx}{\let\mst@dobraces\@firstofone}
1289 \newcommand*{\MTexplicitbracesdonotobeymathxx}{\let\mst@dobraces\@gobble}
1290 \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@mmode@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  $\LaTeX$  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 XeTeX, LuaTeX or default. Removed.

```

1291 \ifmst@nospecials\else\typeout{** \string#\space\string\mathdollar\space\string%\space\st
1292 \count255=\symmtooperatorfont
1293 \multiply\count255 by 256
1294 \advance\count255 by 35
1295   \mathcode‘\#\count255
1296 \advance\count255 by 1
1297   \mathchardef\mathdollar\count255
1298 \advance\count255 by 1
1299   \mathcode‘%\count255
1300 \advance\count255 by 1
1301   \mathcode‘\&\count255
1302 \count255=\symmtooperatorfont
1303 \multiply\count255 by 256
1304 \advance\count255 by 28707 % = "7023
1305   \mathchardef\mst@varfam@mathhash\count255
1306 \advance\count255 by 1
1307   \mathchardef\mst@varfam@mathdollar\count255
1308 \advance\count255 by 1
1309   \mathchardef\mst@varfam@mathpercent\count255
1310 \advance\count255 by 1
1311   \mathchardef\mst@varfam@mathampersand\count255
1312 \mst@do@easynonletters\expandafter{\the\mst@do@easynonletters
1313   \mathcode‘\#= \mst@varfam@mathhash
1314   \let\mathdollar\mst@varfam@mathdollar
1315   \mathcode‘\%= \mst@varfam@mathpercent
1316   \mathcode‘\&= \mst@varfam@mathampersand}
1317 \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<sup>A</sup>T<sub>E</sub>X, 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  
**\sum** `\renewcommand{\prod}{\mathchoice{\mst@prod}{\prodpsy}{\prodpsy}{\prodpsy}}`  
but this did not go well with subscripts and exponents.

Note oct 2012: maybe I should re-examine what I did?

```

1318 \ifmst@symbolmisc\typeout{** symbolmisc: miscellaneous math symbols from Symbol font}
1319 \let\mst@prod\prod
1320 \let\defaultprod\prod
1321 \DeclareMathSymbol{\prodpsy}{\mathop}{mtpsymbol}{213}
1322 \renewcommand*{\prod}{\ifinner\prodpsy\else\mst@prod\fi}
1323 \let\mst@sum\sum
1324 \let\defaultsum\sum
1325 \DeclareMathSymbol{\sumpsy}{\mathop}{mtpsymbol}{229}
1326 \renewcommand*{\sum}{\ifinner\sumpsy\else\mst@sum\fi}

1327 \DeclareMathSymbol{\mst@implies}{\mathrel}{mtpsymbol}{222}
1328 \DeclareRobustCommand*\implies{\;\;\mst@implies\;}
1329 \DeclareMathSymbol{\mst@impliedby}{\mathrel}{mtpsymbol}{220}
1330 \DeclareRobustCommand*\impliedby{\;\;\mst@impliedby\;}
1331 \DeclareRobustCommand*\iff{\;\;\mst@impliedby\mathrel{\mkern-3mu}\mst@implies\;}
1332 \DeclareMathSymbol{\mst@iff}{\mathrel}{mtpsymbol}{219}
1333 \DeclareRobustCommand*\shortiff{\;\;\mst@iff\;}
1334 \DeclareMathSymbol{\mst@to}{\mathrel}{mtpsymbol}{174}
1335 \DeclareMathSymbol{\mst@trait}{\mathrel}{mtpsymbol}{190}
1336 \DeclareRobustCommand*\to{\mst@to}
1337 \DeclareRobustCommand*\longto{\mkern2mu\mst@trait\mathrel{\mkern-10mu}\mst@to}
1338 \DeclareRobustCommand*\mapsto{\mapstochar\mathrel{\mkern0.2mu}\mst@to}
1339 \DeclareRobustCommand*\longmapsto{%
1340 \mapstochar\mathrel{\mkern2mu}\mst@trait\mathrel{\mkern-10mu}\mst@to}
1341 \DeclareMathSymbol{\aleph}{\mathord}{mtpsymbol}{192}
1342 \DeclareMathSymbol{\infty}{\mathord}{mtpsymbol}{165}
1343 \DeclareMathSymbol{\emptyset}{\mathord}{mtpsymbol}{198}
1344 \let\varnothing\emptyset
1345 \DeclareMathSymbol{\nabla}{\mathord}{mtpsymbol}{209}
1346 \DeclareMathSymbol{\surd}{\mathop}{mtpsymbol}{214}
1347 \let\angle\undefined
1348 \DeclareMathSymbol{\angle}{\mathord}{mtpsymbol}{208}
1349 \DeclareMathSymbol{\forall}{\mathord}{mtpsymbol}{34}
1350 \DeclareMathSymbol{\exists}{\mathord}{mtpsymbol}{36}
1351 \DeclareMathSymbol{\neg}{\mathord}{mtpsymbol}{216}

```



```

1352 \DeclareMathSymbol{\clubsuit}{\mathord}{mtpsymbol}{167}
1353 \DeclareMathSymbol{\diamondsuit}{\mathord}{mtpsymbol}{168}
1354 \DeclareMathSymbol{\heartsuit}{\mathord}{mtpsymbol}{169}
1355 \DeclareMathSymbol{\spadesuit}{\mathord}{mtpsymbol}{170}
1356 \DeclareMathSymbol{\smallint}{\mathop}{mtpsymbol}{242}
1357 \DeclareMathSymbol{\wedge}{\mathbin}{mtpsymbol}{217}
1358 \DeclareMathSymbol{\vee}{\mathbin}{mtpsymbol}{218}
1359 \DeclareMathSymbol{\cap}{\mathbin}{mtpsymbol}{199}
1360 \DeclareMathSymbol{\cup}{\mathbin}{mtpsymbol}{200}
1361 \DeclareMathSymbol{\bullet}{\mathbin}{mtpsymbol}{183}
1362 \DeclareMathSymbol{\div}{\mathbin}{mtpsymbol}{184}
1363 \DeclareMathSymbol{\otimes}{\mathbin}{mtpsymbol}{196}
1364 \DeclareMathSymbol{\oplus}{\mathbin}{mtpsymbol}{197}
1365 \DeclareMathSymbol{\pm}{\mathbin}{mtpsymbol}{177}
1366 \DeclareMathSymbol{\times}{\mathbin}{mtpsymbol}{180}
1367 \DeclareMathSymbol{\propto}{\mathrel}{mtpsymbol}{181}
1368 \DeclareMathSymbol{\mid}{\mathrel}{mtpsymbol}{124}
1369 \DeclareMathSymbol{\leq}{\mathrel}{mtpsymbol}{163}
1370 \DeclareMathSymbol{\geq}{\mathrel}{mtpsymbol}{179}
1371 \DeclareMathSymbol{\approx}{\mathrel}{mtpsymbol}{187}
1372 \DeclareMathSymbol{\supset}{\mathrel}{mtpsymbol}{201}
1373 \DeclareMathSymbol{\subset}{\mathrel}{mtpsymbol}{204}
1374 \DeclareMathSymbol{\supseteq}{\mathrel}{mtpsymbol}{202}
1375 \DeclareMathSymbol{\subseteq}{\mathrel}{mtpsymbol}{205}
1376 \DeclareMathSymbol{\in}{\mathrel}{mtpsymbol}{206}
1377 \DeclareMathSymbol{\sim}{\mathrel}{mtpsymbol}{126}
1378 \let\cong\undefined
1379 \DeclareMathSymbol{\cong}{\mathrel}{mtpsymbol}{64}
1380 \DeclareMathSymbol{\perp}{\mathrel}{mtpsymbol}{94}
1381 \DeclareMathSymbol{\equiv}{\mathrel}{mtpsymbol}{186}
1382 \let\notin\undefined
1383 \DeclareMathSymbol{\notin}{\mathrel}{mtpsymbol}{207}
1384 \DeclareMathDelimiter{\rangle}
1385     {\mathclose}{mtpsymbol}{241}{largesymbols}{"0B}
1386 \DeclareMathDelimiter{\langle}
1387     {\mathopen}{mtpsymbol}{225}{largesymbols}{"0A}
1388 \fi

```

symbolre I like the `\Re` and `\Im` from Symbol, so I overwrite the CM ones.

```

1389 \ifmst@symbolre\typeout{** symbolre: \string\Re\space and \string\Im\space from Sym-
bol font}
1390 \DeclareMathSymbol{\Re}{\mathord}{mtpsymbol}{C2}
1391 \DeclareMathSymbol{\Im}{\mathord}{mtpsymbol}{C1}
1392 \DeclareMathSymbol{\DotTriangle}{\mathord}{mtpsymbol}{92}
1393 \fi

```

Greek letters LGRgreek > selfGreek > eulergreek > symbolgreek

1.11 I correct some bugs on how eulergreek and symbolgreek interacted.

1.12b I introduced another very stupid bug (regarding uppercase Greek) in 1.1. This is corrected here. All this business of checking for `\digamma` was truly stupid as some package

might well have defined the font for Greek without having defined `\digamma`, I don't know what crossed my dumb mind when I committed this insane code and started redefining uppercase Greek, and it is even worse than that as I was redefining not only relatively benign things such as `\Alpha` but also `\Phi` etc. . .

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.

\* version 1.12b did not define the `\omicron` in the case when no Greek-related option was passed to the package. This was a bug.

```

1394 \let\mst@mathord\mathalpha
1395 \mst@goaheadtrue
1396 \ifmst@selfGreek
1397     \def\mst@font@tbu{mtselfGreekfont}
1398 \else
1399 \ifmst@eulergreek
1400     \def\mst@font@tbu{mteulervm}
1401 \else
1402 \ifmst@symbolgreek
1403     \def\mst@font@tbu{mtpsymbol}
1404     \let\mst@mathord\mathord
1405 \else
1406 \ifmst@LGRgreek
1407     \mst@goaheadfalse
1408 \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.

```

1409     \mst@goaheadfalse
1410     \ifx\omicron\undefined
1411         \newcommand*{\omicron}{\mst@alph@omicron{o}}
1412     \fi
1413 \fi\fi\fi\fi
1414 \ifmst@goahead
1415 \DeclareMathSymbol{\Alpha}{\mst@mathord}{\mst@font@tbu}{41}
1416 \DeclareMathSymbol{\Beta}{\mst@mathord}{\mst@font@tbu}{42}
1417 \DeclareMathSymbol{\Epsilon}{\mst@mathord}{\mst@font@tbu}{45}
1418 \DeclareMathSymbol{\Zeta}{\mst@mathord}{\mst@font@tbu}{5A}
1419 \DeclareMathSymbol{\Eta}{\mst@mathord}{\mst@font@tbu}{48}
1420 \DeclareMathSymbol{\Iota}{\mst@mathord}{\mst@font@tbu}{49}
1421 \DeclareMathSymbol{\Kappa}{\mst@mathord}{\mst@font@tbu}{4B}
1422 \DeclareMathSymbol{\Mu}{\mst@mathord}{\mst@font@tbu}{4D}
1423 \DeclareMathSymbol{\Nu}{\mst@mathord}{\mst@font@tbu}{4E}
1424 \DeclareMathSymbol{\Omicron}{\mst@mathord}{\mst@font@tbu}{4F}
1425 \DeclareMathSymbol{\Rho}{\mst@mathord}{\mst@font@tbu}{50}
1426 \DeclareMathSymbol{\Tau}{\mst@mathord}{\mst@font@tbu}{54}
1427 \DeclareMathSymbol{\Chi}{\mst@mathord}{\mst@font@tbu}{58}

```

When we in fact use `Symbol`, we have to correct `\Rho` and `\Chi`. And `\Digamma` is non-existent

in fact (no F in Symbol, F codes a  $\Phi$ ).

```

1428 \ifx\mst@mathord\mathord
      symbolgreek but neither eulergreek nor selfGreek
1429 %% attention le P de Symbol est un \Pi pas un \Rho
1430 \DeclareMathSymbol{\Rho}{\mathord}{mtpsymbol}{52}
1431 %% attention le X de Symbol est un \Xi pas un \Chi
1432 \DeclareMathSymbol{\Chi}{\mathord}{mtpsymbol}{43}
1433 %% attention le F de Symbol est un \Phi. Il n'y a pas de \Digamma
1434 \DeclareMathSymbol{\Gamma}{\mathord}{mtpsymbol}{47}
1435 \DeclareMathSymbol{\Delta}{\mathord}{mtpsymbol}{44}
1436 \DeclareMathSymbol{\Theta}{\mathord}{mtpsymbol}{51}
1437 \DeclareMathSymbol{\Lambda}{\mathord}{mtpsymbol}{4C}
1438 \DeclareMathSymbol{\Xi}{\mathord}{mtpsymbol}{58}
1439 \DeclareMathSymbol{\Pi}{\mathord}{mtpsymbol}{50}
1440 \DeclareMathSymbol{\Sigma}{\mathord}{mtpsymbol}{53}
1441 \DeclareMathSymbol{\Upsilon}{\mathord}{mtpsymbol}{A1}
1442 \DeclareMathSymbol{\Phi}{\mathord}{mtpsymbol}{46}
1443 \DeclareMathSymbol{\Psi}{\mathord}{mtpsymbol}{59}
1444 \DeclareMathSymbol{\Omega}{\mathord}{mtpsymbol}{57}
1445 \else
      not symbolgreek but eulergreek or selfGreek or both
1446 \DeclareMathSymbol{\Digamma}{\mathalpha}{\mst@font@tbu}{46}
1447 \DeclareMathSymbol{\Gamma}{\mathalpha}{\mst@font@tbu}{00}
1448 \DeclareMathSymbol{\Delta}{\mathalpha}{\mst@font@tbu}{01}
1449 \DeclareMathSymbol{\Theta}{\mathalpha}{\mst@font@tbu}{02}
1450 \DeclareMathSymbol{\Lambda}{\mathalpha}{\mst@font@tbu}{03}
1451 \DeclareMathSymbol{\Xi}{\mathalpha}{\mst@font@tbu}{04}
1452 \DeclareMathSymbol{\Pi}{\mathalpha}{\mst@font@tbu}{05}
1453 \DeclareMathSymbol{\Sigma}{\mathalpha}{\mst@font@tbu}{06}
1454 \DeclareMathSymbol{\Upsilon}{\mathalpha}{\mst@font@tbu}{07}
1455 \DeclareMathSymbol{\Phi}{\mathalpha}{\mst@font@tbu}{08}
1456 \DeclareMathSymbol{\Psi}{\mathalpha}{\mst@font@tbu}{09}
1457 \DeclareMathSymbol{\Omega}{\mathalpha}{\mst@font@tbu}{0A}
1458 \fi
1459 \fi

```

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<sup>A</sup>T<sub>E</sub>X are of type **mathord**. If we use the Euler font it is perhaps better to have them be of type **mathalpha**

```

1460 \ifmst@goahead
1461 \ifmst@eulergreek
1462 \DeclareMathSymbol{\alpha}{\mathalpha}{mteulervm}{0B}
1463 \DeclareMathSymbol{\beta}{\mathalpha}{mteulervm}{0C}
1464 \DeclareMathSymbol{\gamma}{\mathalpha}{mteulervm}{0D}
1465 \DeclareMathSymbol{\delta}{\mathalpha}{mteulervm}{0E}
1466 \DeclareMathSymbol{\epsilon}{\mathalpha}{mteulervm}{0F}
1467 \DeclareMathSymbol{\zeta}{\mathalpha}{mteulervm}{10}

```

```

1468 \DeclareMathSymbol{\eta}      {\mathalpha}{mteulervm}{11}
1469 \DeclareMathSymbol{\theta}    {\mathalpha}{mteulervm}{12}
1470 \DeclareMathSymbol{\iota}     {\mathalpha}{mteulervm}{13}
1471 \DeclareMathSymbol{\kappa}    {\mathalpha}{mteulervm}{14}
1472 \DeclareMathSymbol{\lambda}   {\mathalpha}{mteulervm}{15}
1473 \DeclareMathSymbol{\mu}       {\mathalpha}{mteulervm}{16}
1474 \DeclareMathSymbol{\nu}       {\mathalpha}{mteulervm}{17}
1475 \DeclareMathSymbol{\xi}       {\mathalpha}{mteulervm}{18}
1476 \let\omicron\undefined
1477 \DeclareMathSymbol{\omicron}    {\mathalpha}{mteulervm}{6F}
1478 \DeclareMathSymbol{\pi}       {\mathalpha}{mteulervm}{19}
1479 \DeclareMathSymbol{\rho}      {\mathalpha}{mteulervm}{1A}
1480 \DeclareMathSymbol{\sigma}    {\mathalpha}{mteulervm}{1B}
1481 \DeclareMathSymbol{\tau}      {\mathalpha}{mteulervm}{1C}
1482 \DeclareMathSymbol{\upsilon}  {\mathalpha}{mteulervm}{1D}
1483 \DeclareMathSymbol{\phi}      {\mathalpha}{mteulervm}{1E}
1484 \DeclareMathSymbol{\chi}      {\mathalpha}{mteulervm}{1F}
1485 \DeclareMathSymbol{\psi}      {\mathalpha}{mteulervm}{20}
1486 \DeclareMathSymbol{\omega}    {\mathalpha}{mteulervm}{21}
1487 \DeclareMathSymbol{\varepsilon}{\mathalpha}{mteulervm}{22}
1488 \DeclareMathSymbol{\vartheta}{\mathalpha}{mteulervm}{23}
1489 \DeclareMathSymbol{\varpi}    {\mathalpha}{mteulervm}{24}
1490 \let\varrho=\rho
1491 \let\varsigma=\sigma
1492 \DeclareMathSymbol{\varphi}   {\mathalpha}{mteulervm}{27}
1493 \DeclareMathSymbol{\partial}  {\mathalpha}{mteulervm}{40}
1494 \DeclareMathSymbol{\wp}       {\mathalpha}{mteulervm}{7D}
1495 \DeclareMathSymbol{\ell}      {\mathalpha}{mteulervm}{60}
1496 \else
1497 \ifmst@symbolgreek
1498 \DeclareMathSymbol{\alpha}    {\mathord}{mtpsymbol}{61}
1499 \DeclareMathSymbol{\beta}    {\mathord}{mtpsymbol}{62}
1500 \DeclareMathSymbol{\gamma}   {\mathord}{mtpsymbol}{67}
1501 \DeclareMathSymbol{\delta}   {\mathord}{mtpsymbol}{64}
1502 \DeclareMathSymbol{\epsilon} {\mathord}{mtpsymbol}{65}
1503 \DeclareMathSymbol{\zeta}    {\mathord}{mtpsymbol}{7A}
1504 \DeclareMathSymbol{\eta}     {\mathord}{mtpsymbol}{68}
1505 \DeclareMathSymbol{\theta}   {\mathord}{mtpsymbol}{71}
1506 \DeclareMathSymbol{\iota}    {\mathord}{mtpsymbol}{69}
1507 \DeclareMathSymbol{\kappa}   {\mathord}{mtpsymbol}{6B}
1508 \DeclareMathSymbol{\lambda}  {\mathord}{mtpsymbol}{6C}
1509 \DeclareMathSymbol{\mu}      {\mathord}{mtpsymbol}{6D}
1510 \DeclareMathSymbol{\nu}      {\mathord}{mtpsymbol}{6E}
1511 \DeclareMathSymbol{\xi}      {\mathord}{mtpsymbol}{78}
1512 \let\omicron\undefined
1513 \DeclareMathSymbol{\omicron}   {\mathord}{mtpsymbol}{6F}
1514 \DeclareMathSymbol{\pi}       {\mathord}{mtpsymbol}{70}
1515 \DeclareMathSymbol{\rho}      {\mathord}{mtpsymbol}{72}
1516 \DeclareMathSymbol{\sigma}   {\mathord}{mtpsymbol}{73}

```

```

1517 \DeclareMathSymbol{\tau}{\mathord}{mtpsymbol}{"74}
1518 \DeclareMathSymbol{\upsilon}{\mathord}{mtpsymbol}{"75}
1519 \DeclareMathSymbol{\phi}{\mathord}{mtpsymbol}{"66}
1520 \DeclareMathSymbol{\chi}{\mathord}{mtpsymbol}{"63}
1521 \DeclareMathSymbol{\psi}{\mathord}{mtpsymbol}{"79}
1522 \DeclareMathSymbol{\omega}{\mathord}{mtpsymbol}{"77}
1523 \let\varepsilon=\epsilon
1524 \DeclareMathSymbol{\vartheta}{\mathord}{mtpsymbol}{"4A}
1525 \DeclareMathSymbol{\varpi}{\mathord}{mtpsymbol}{"76}
1526 \let\varrho=\rho
1527 \DeclareMathSymbol{\varsigma}{\mathord}{mtpsymbol}{"56}
1528 \DeclareMathSymbol{\varphi}{\mathord}{mtpsymbol}{"6A}
1529 \DeclareMathSymbol{\partial}{\mathord}{mtpsymbol}{"B6}
1530 \DeclareMathSymbol{\wp}{\mathord}{mtpsymbol}{"C3}
1531 \fi\fi\fi
1532 %%
1533 \ifmst@LGRgreek % internal names for subdued implementation (1.15c-1.15e)
1534 \let\mst@origAlpha\Alpha
1535 \let\mst@origBeta\Beta
1536 \let\mst@origGamma\Gamma
1537 \let\mst@origDelta\Delta
1538 \let\mst@origEpsilon\Epsilon
1539 \let\mst@origZeta\Zeta
1540 \let\mst@origEta\Eta
1541 \let\mst@origTheta\Theta
1542 \let\mst@origIota\Iota
1543 \let\mst@origKappa\Kappa
1544 \let\mst@origLambda\Lambda
1545 \let\mst@origMu\Mu
1546 \let\mst@origNu\Nu
1547 \let\mst@origXi\Xi
1548 \let\mst@origOmicron\Omicron
1549 \let\mst@origPi\Pi
1550 \let\mst@origRho\Rho
1551 \let\mst@origSigma\Sigma
1552 \let\mst@origTau\Tau
1553 \let\mst@origUpsilon\Upsilon
1554 \let\mst@origPhi\Phi
1555 \let\mst@origChi\Chi
1556 \let\mst@origPsi\Psi
1557 \let\mst@origOmega\Omega
1558 %
1559 \let\mst@origalpha\alpha
1560 \let\mst@origbeta\beta
1561 \let\mst@origgamma\gamma
1562 \let\mst@origdelta\delta
1563 \let\mst@origepsilon\epsilon
1564 \let\mst@origzeta\zeta
1565 \let\mst@origeta\eta

```

```

1566 \let\mst@origtheta\theta
1567 \let\mst@origiota\iota
1568 \let\mst@origkappa\kappa
1569 \let\mst@origlambda\lambda
1570 \let\mst@origmu\mu
1571 \let\mst@orignu\nu
1572 \let\mst@origxi\xi
1573 \let\mst@origomicron\omicron
1574 \let\mst@origpi\pi
1575 \let\mst@origrho\rho
1576 \let\mst@origvarsigma\varsigma
1577 \let\mst@origsigma\sigma
1578 \let\mst@origtau\tau
1579 \let\mst@origupsilon\upsilon
1580 \let\mst@origphi\phi
1581 \let\mst@origchi\chi
1582 \let\mst@origpsi\psi
1583 \let\mst@origomega\omega
1584 \let\mst@origDigamma\Digamma
1585 \let\mst@origdigamma\digamma
1586 %%
1587 \def\mst@restoregreek{%
1588 \let\Alpha\mst@origAlpha
1589 \let\Beta\mst@origBeta
1590 \let\Gamma\mst@origGamma
1591 \let\Delta\mst@origDelta
1592 \let\Epsilon\mst@origEpsilon
1593 \let\Zeta\mst@origZeta
1594 \let\Eta\mst@origEta
1595 \let\Theta\mst@origTheta
1596 \let\Iota\mst@origIota
1597 \let\Kappa\mst@origKappa
1598 \let\Lambda\mst@origLambda
1599 \let\Mu\mst@origMu
1600 \let\Nu\mst@origNu
1601 \let\Xi\mst@origXi
1602 \let\Omicron\mst@origOmicron
1603 \let\Pi\mst@origPi
1604 \let\Rho\mst@origRho
1605 \let\Sigma\mst@origSigma
1606 \let\Tau\mst@origTau
1607 \let\Upsilon\mst@origUpsilon
1608 \let\Phi\mst@origPhi
1609 \let\Chi\mst@origChi
1610 \let\Psi\mst@origPsi
1611 \let\Omega\mst@origOmega
1612 %
1613 \let\alpha\mst@origalpha
1614 \let\beta\mst@origbeta

```

```

1615 \let\gamma\mst@origgamma
1616 \let\delta\mst@origdelta
1617 \let\epsilon\mst@origepsilon
1618 \let\zeta\mst@origzeta
1619 \let\eta\mst@origeta
1620 \let\theta\mst@origtheta
1621 \let\iota\mst@origiota
1622 \let\kappa\mst@origkappa
1623 \let\lambda\mst@origlambda
1624 \let\mu\mst@origmu
1625 \let\nu\mst@orignu
1626 \let\xi\mst@origxi
1627 \let\omicron\mst@origomicron
1628 \let\pi\mst@origpi
1629 \let\rho\mst@origrho
1630 \let\varsigma\mst@origvarsigma
1631 \let\sigma\mst@origsigma
1632 \let\tau\mst@origtau
1633 \let\upsilon\mst@origupsilon
1634 \let\phi\mst@origphi
1635 \let\chi\mst@origchi
1636 \let\psi\mst@origpsi
1637 \let\omega\mst@origomega
1638 \let\Digamma\mst@origDigamma
1639 \let\digamma\mst@origdigamma
1640 }
1641 %%
1642 \def\mst@setuplgrgreek{%
1643 \let\Alpha\mst@Alpha
1644 \let\Beta\mst@Beta
1645 \let\Gamma\mst@Gamma
1646 \let\Delta\mst@Delta
1647 \let\Epsilon\mst@Epsilon
1648 \let\Zeta\mst@Zeta
1649 \let\Eta\mst@Eta
1650 \let\Theta\mst@Theta
1651 \let\Iota\mst@Iota
1652 \let\Kappa\mst@Kappa
1653 \let\Lambda\mst@Lambda
1654 \let\Mu\mst@Mu
1655 \let\Nu\mst@Nu
1656 \let\xi\mst@Xi
1657 \let\Omicron\mst@Omicron
1658 \let\Pi\mst@Pi
1659 \let\Rho\mst@Rho
1660 \let\Sigma\mst@Sigma
1661 \let\Tau\mst@Tau
1662 \let\Upsilon\mst@Upsilon
1663 \let\Phi\mst@Phi

```

```

1664 \let\Chi\mst@Chi
1665 \let\Psi\mst@Psi
1666 \let\Omega\mst@Omega
1667 %
1668 \let\alpha\mst@alpha
1669 \let\beta\mst@beta
1670 \let\gamma\mst@gamma
1671 \let\delta\mst@delta
1672 \let\epsilon\mst@epsilon
1673 \let\zeta\mst@zeta
1674 \let\eta\mst@eta
1675 \let\theta\mst@theta
1676 \let\iota\mst@iota
1677 \let\kappa\mst@kappa
1678 \let\lambda\mst@lambda
1679 \let\mu\mst@mu
1680 \let\nu\mst@nu
1681 \let\xi\mst@xi
1682 \let\omicron\mst@omicron
1683 \let\pi\mst@pi
1684 \let\rho\mst@rho
1685 \let\varsigma\mst@varsigma
1686 \let\sigma\mst@sigma
1687 \let\tau\mst@tau
1688 \let\upsilon\mst@upsilon
1689 \let\phi\mst@phi
1690 \let\chi\mst@chi
1691 \let\psi\mst@psi
1692 \let\omega\mst@omega
1693 \let\Digamma\mst@Digamma
1694 \let\digamma\mst@digamma
1695 }
1696 %%
1697 \DeclareMathSymbol{\mst@Alpha}{\mathalpha}{mtlgrfontupper}{65}
1698 \DeclareMathSymbol{\mst@Beta}{\mathalpha}{mtlgrfontupper}{66}
1699 \DeclareMathSymbol{\mst@Gamma}{\mathalpha}{mtlgrfontupper}{71}
1700 \DeclareMathSymbol{\mst@Delta}{\mathalpha}{mtlgrfontupper}{68}
1701 \DeclareMathSymbol{\mst@Epsilon}{\mathalpha}{mtlgrfontupper}{69}
1702 \DeclareMathSymbol{\mst@Zeta}{\mathalpha}{mtlgrfontupper}{90}
1703 \DeclareMathSymbol{\mst@Eta}{\mathalpha}{mtlgrfontupper}{72}
1704 \DeclareMathSymbol{\mst@Theta}{\mathalpha}{mtlgrfontupper}{74}
1705 \DeclareMathSymbol{\mst@Iota}{\mathalpha}{mtlgrfontupper}{73}
1706 \DeclareMathSymbol{\mst@Kappa}{\mathalpha}{mtlgrfontupper}{75}
1707 \DeclareMathSymbol{\mst@Lambda}{\mathalpha}{mtlgrfontupper}{76}
1708 \DeclareMathSymbol{\mst@Mu}{\mathalpha}{mtlgrfontupper}{77}
1709 \DeclareMathSymbol{\mst@Nu}{\mathalpha}{mtlgrfontupper}{78}
1710 \DeclareMathSymbol{\mst@Xi}{\mathalpha}{mtlgrfontupper}{88}
1711 \DeclareMathSymbol{\mst@Omicron}{\mathalpha}{mtlgrfontupper}{79}
1712 \DeclareMathSymbol{\mst@Pi}{\mathalpha}{mtlgrfontupper}{80}

```



```

1713 \DeclareMathSymbol{\mst@Rho}{\mathalpha}{mtlgrfontupper}{82}
1714 \DeclareMathSymbol{\mst@Sigma}{\mathalpha}{mtlgrfontupper}{83}
1715 \DeclareMathSymbol{\mst@Tau}{\mathalpha}{mtlgrfontupper}{84}
1716 \DeclareMathSymbol{\mst@Upsilon}{\mathalpha}{mtlgrfontupper}{85}
1717 \DeclareMathSymbol{\mst@Phi}{\mathalpha}{mtlgrfontupper}{70}
1718 \DeclareMathSymbol{\mst@Chi}{\mathalpha}{mtlgrfontupper}{81}
1719 \DeclareMathSymbol{\mst@Psi}{\mathalpha}{mtlgrfontupper}{89}
1720 \DeclareMathSymbol{\mst@Omega}{\mathalpha}{mtlgrfontupper}{87}
1721 %
1722 \DeclareMathSymbol{\mst@alpha}{\mathalpha}{mtlgrfontlower}{97}
1723 \DeclareMathSymbol{\mst@beta}{\mathalpha}{mtlgrfontlower}{98}
1724 \DeclareMathSymbol{\mst@gamma}{\mathalpha}{mtlgrfontlower}{103}
1725 \DeclareMathSymbol{\mst@delta}{\mathalpha}{mtlgrfontlower}{100}
1726 \DeclareMathSymbol{\mst@epsilon}{\mathalpha}{mtlgrfontlower}{101}
1727 \DeclareMathSymbol{\mst@zeta}{\mathalpha}{mtlgrfontlower}{122}
1728 \DeclareMathSymbol{\mst@eta}{\mathalpha}{mtlgrfontlower}{104}
1729 \DeclareMathSymbol{\mst@theta}{\mathalpha}{mtlgrfontlower}{106}
1730 \DeclareMathSymbol{\mst@iota}{\mathalpha}{mtlgrfontlower}{105}
1731 \DeclareMathSymbol{\mst@kappa}{\mathalpha}{mtlgrfontlower}{107}
1732 \DeclareMathSymbol{\mst@lambda}{\mathalpha}{mtlgrfontlower}{108}
1733 \DeclareMathSymbol{\mst@mu}{\mathalpha}{mtlgrfontlower}{109}
1734 \DeclareMathSymbol{\mst@nu}{\mathalpha}{mtlgrfontlower}{110}
1735 \DeclareMathSymbol{\mst@xi}{\mathalpha}{mtlgrfontlower}{120}
1736 \DeclareMathSymbol{\mst@omicron}{\mathalpha}{mtlgrfontlower}{111}
1737 \DeclareMathSymbol{\mst@pi}{\mathalpha}{mtlgrfontlower}{112}
1738 \DeclareMathSymbol{\mst@rho}{\mathalpha}{mtlgrfontlower}{114}
1739 \DeclareMathSymbol{\mst@varsigma}{\mathalpha}{mtlgrfontlower}{99}
1740 \DeclareMathSymbol{\mst@sigma}{\mathalpha}{mtlgrfontlower}{115}
1741 \DeclareMathSymbol{\mst@tau}{\mathalpha}{mtlgrfontlower}{116}
1742 \DeclareMathSymbol{\mst@upsilon}{\mathalpha}{mtlgrfontlower}{117}
1743 \DeclareMathSymbol{\mst@phi}{\mathalpha}{mtlgrfontlower}{102}
1744 \DeclareMathSymbol{\mst@chi}{\mathalpha}{mtlgrfontlower}{113}
1745 \DeclareMathSymbol{\mst@psi}{\mathalpha}{mtlgrfontlower}{121}
1746 \DeclareMathSymbol{\mst@omega}{\mathalpha}{mtlgrfontlower}{119}
1747 \DeclareMathSymbol{\mst@digamma}{\mathalpha}{mtlgrfontlower}{147}
1748 \DeclareMathSymbol{\mst@Digamma}{\mathalpha}{mtlgrfontlower}{195}
1749 % cf http://milde.users.sourceforge.net/LGR/lgrxenc.def.html
1750 % et greek.ldf du package babel
1751 \ifmst@subdued\else\mst@setuplgrgreek\fi
1752 \fi

```

\inodot In 1.0, I had them of type mathord, here I choose mathalpha. If I used \i and \j from the text  
\jnodot 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.

```

1753 \edef\mst@tmp@enc{\encodingdefault}
1754 \mst@goaheadtrue
1755 \ifx\mst@tmp@enc\mst@eui % xetex and unicode font

```

```

1756 \XeTeXmathchardef\inodot="7 \symmtletterfont "0131 \relax
1757 \XeTeXmathchardef\jnodot="7 \symmtletterfont "0237 \relax
1758 \else
1759 \ifx\mst@tmp@enc\mst@euui % luatex and unicode font
1760 \luatexUmathchardef\inodot="7 \symmtletterfont "0131 \relax
1761 \luatexUmathchardef\jnodot="7 \symmtletterfont "0237 \relax
1762 \else
1763 \ifx\mst@tmp@enc\mst@ti % T1
1764 \DeclareMathSymbol{\inodot}{\mathalpha}{mtletterfont}{25}
1765 \DeclareMathSymbol{\jnodot}{\mathalpha}{mtletterfont}{26}
1766 \else
1767 \ifx\mst@tmp@enc\mst@oti % OT1
1768 \DeclareMathSymbol{\inodot}{\mathalpha}{mtletterfont}{16}
1769 \DeclareMathSymbol{\jnodot}{\mathalpha}{mtletterfont}{17}
1770 \else
1771 \ifx\mst@tmp@enc\mst@lyi % LY1
1772 \DeclareMathSymbol{\inodot}{\mathalpha}{mtletterfont}{16}
1773 \DeclareMathSymbol{\jnodot}{\mathalpha}{mtletterfont}{17}
1774 \else
1775 \ifmst@XeTeX\mst@goaheadfalse\else\ifmst@LuaTeX\mst@goaheadfalse\else
1776 \DeclareMathSymbol{\inodot}{\mathalpha}{mtletterfont}
1777 {\expandafter\the\expandafter\csname\mst@tmp@enc\string\i\endcsname}
1778 \DeclareMathSymbol{\jnodot}{\mathalpha}{mtletterfont}
1779 {\expandafter\the\expandafter\csname\mst@tmp@enc\string\j\endcsname}
1780 \fi\fi
1781 \fi\fi\fi\fi\fi
1782 \ifmst@defaultimath\else\typeout{** \string\i\space and \string\j\space}
1783 \ifmst@goahead
1784 \renewcommand*{\imath}{\inodot}
1785 \renewcommand*{\jmath}{\jnodot}
1786 \let\mst@oldi\i \let\mst@oldj\j
1787 \DeclareRobustCommand*{\i}{\ifmmode\inodot\else\mst@oldi\fi}
1788 \DeclareRobustCommand*{\j}{\ifmmode\jnodot\else\mst@oldj\fi}
1789 \fi
1790 \fi

```

**math accents** 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<sup>A</sup>T<sub>E</sub>X, the mathaccents 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

```

1791 \edef\mst@tmp@enc{\encodingdefault} %% rather one too many than sorry
1792 \ifmst@mathaccents\typeout{** math accents}
1793 \ifx\mst@ti\mst@tmp@enc
1794 \DeclareMathAccent{\acute}{\mathalpha}{mtooperatorfont}{1}
1795 \DeclareMathAccent{\grave}{\mathalpha}{mtooperatorfont}{0}
1796 \DeclareMathAccent{\ddot}{\mathalpha}{mtooperatorfont}{4}
1797 \DeclareMathAccent{\tilde}{\mathalpha}{mtooperatorfont}{3}

```

```

1798 \DeclareMathAccent{\bar}{\mathalpha}{mtoperatorfont}{9}
1799 \DeclareMathAccent{\breve}{\mathalpha}{mtoperatorfont}{8}
1800 \DeclareMathAccent{\check}{\mathalpha}{mtoperatorfont}{7}
1801 \DeclareMathAccent{\hat}{\mathalpha}{mtoperatorfont}{2}
1802 \DeclareMathAccent{\dot}{\mathalpha}{mtoperatorfont}{10}
1803 \DeclareMathAccent{\mathring}{\mathalpha}{mtoperatorfont}{6}
1804 \else
1805 \DeclareMathAccent{\acute}{\mathalpha}{mtoperatorfont}{19}
1806 \DeclareMathAccent{\grave}{\mathalpha}{mtoperatorfont}{18}
1807 \DeclareMathAccent{\ddot}{\mathalpha}{mtoperatorfont}{127}
1808 \DeclareMathAccent{\tilde}{\mathalpha}{mtoperatorfont}{126}
1809 \DeclareMathAccent{\bar}{\mathalpha}{mtoperatorfont}{22}
1810 \DeclareMathAccent{\breve}{\mathalpha}{mtoperatorfont}{21}
1811 \DeclareMathAccent{\check}{\mathalpha}{mtoperatorfont}{20}
1812 \DeclareMathAccent{\hat}{\mathalpha}{mtoperatorfont}{94}
1813 \DeclareMathAccent{\dot}{\mathalpha}{mtoperatorfont}{95}
1814 \DeclareMathAccent{\mathring}{\mathalpha}{mtoperatorfont}{23}
1815 \ifx\mst@lyi\mst@tmp@enc % LY1 encoding
1816 \DeclareMathAccent{\dot}{\mathalpha}{mtoperatorfont}{5}
1817 \else
1818 \ifx\mst@oti\mst@tmp@enc\else
1819 \typeout{** mathastext: math accents have been assumed to be^J%
1820 ** as in OT1 encoding.}
1821 \fi
1822 \fi
1823 \fi\fi

```

**Math sizes** I took the code for \Huge and \HUGE from the `moresize` package of Christian CORNELSEN

```

1824 \ifmst@defaultsizes\else
1825 \providecommand\@xxxpt{29.86}
1826 \providecommand\@xxxvpt{35.83}
1827 \ifmst@twelve
1828 \def\Huge{\@setfontsize\Huge\@xxxpt{36}}
1829 \def\HUGE{\@setfontsize\HUGE\@xxxvpt{43}}
1830 \typeout{** \protect\Huge\space and \protect\HUGE\space have been (re)-defined.}
1831 \else
1832 \def\HUGE{\@setfontsize\HUGE\@xxxpt{36}}
1833 \typeout{** \protect\HUGE\space has been (re)-defined.}
1834 \fi

```

I choose rather big subscripts.

```

1835 \def\defaultscriptratio{.8333}
1836 \def\defaultscriptscriptratio{.7}
1837 \DeclareMathSizes{9}{9}{7}{5}
1838 \DeclareMathSizes{\@xpt}{\@xpt}{8}{6}
1839 \DeclareMathSizes{\@xipt}{\@xipt}{9}{7}
1840 \DeclareMathSizes{\@xiipt}{\@xiipt}{10}{8}
1841 \DeclareMathSizes{\@xivpt}{\@xivpt}{\@xiipt}{10}
1842 \DeclareMathSizes{\@xvipt}{\@xvipt}{\@xivpt}{\@xiipt}
1843 \DeclareMathSizes{\@xxpt}{\@xxpt}{\@xvipt}{\@xivpt}

```

```

1844 \DeclareMathSizes{\@xxvpt}{\@xxvpt}{\@xxpt}{\@xvipt}
1845 \DeclareMathSizes{\@xxxpt}{\@xxxpt}{\@xxvpt}{\@xxpt}
1846 \DeclareMathSizes{\@xxxvpt}{\@xxxvpt}{\@xxxpt}{\@xxvpt}
1847 \typeout{** mathastext has declared larger sizes for subscripts.^^J%
1848 ** To keep LaTeX defaults, use option 'defaultmathsizes'.}
1849 \fi

1850 \endinput

```