# The mathastext package

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**Abstract**

The mathastext package automatically (or only locally) changes the fonts used in math mode for the letters and digits (and a few other punctuation and symbol signs) and replaces them with the font used for the 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.

# 1 What mathastext does

## 1.1 Examples

mathastext's basic aim is to have the same font for text and mathematics. 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 ($VI_{\nu,n}$):

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

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

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

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

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 ($VI_{\nu,n}$):

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

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

equation:

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

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

This was typeset using the Times font (available in any 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 $(VI_{\nu,n})$:

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

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

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

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

And after all that, we may wish to return to the default math typesetting:

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

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

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 `cmtt`, `cmss`, and `txr`, which are part of standard TEX distributions.[1]

[1] The first two are available (with no need to load explicitely 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.

## 1.2 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. As soon as one tries out other fonts for text than the Computer Modern ones one realizes how extremely "thin" are the default TEX 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 to put in the preamble:

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

Throughout the entire document, all letters, digits, and punctuation signs inside math mode will then be typeset in Times.[2] The exact list of characters concerned by mathastext belongs to the basic ASCII set:

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

Missing from the list are the ' and the -. Indeed the prime $'$ indicating derivatives is left to its default by mathastext as the text font glyph ' is not, as a rule, a satisfying alternative. Also the minus sign is picked up from the endash character –, if available, and not the hyphen character -. And 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 symbolmisc was used.

The italic option tells the letters to be in italic shape (they will be upright in operator names), as is the standardized habit. However, one should be aware that the built-in placement routines of TEX in math mode expect the math italic to have some (tiny) white space around them, so that they don't "stick" to other symbols, such as a $\prod$: compare $if\prod$ with a pure math mode $if\prod$. Compare also (as is done in any book on LATEX) the text italic with the math italic (here for Latin Modern):[3]

$$\textit{abcdefghijklmnopqrstuvwxyz}$$
$$abcdefghijklmnopqrstuvwxyz$$

Furthermore the math parentheses are not the same as the text parentheses, compare *(ab)* (text italic) with $(ab)$ (math): the math parentheses are upright! Fear not, mathastext picks up the parentheses from the upright shape (it can be coerced to do otherwise). Nevertheless sometimes the text parentheses are just not that usable, so there is a package option noparenthesis. There are many more options (complete details given further on in this document), let me mention basic (do only letters and digits) and nodigits (perhaps the old style figures from text do not fit so well in math).

I briefly alluded to the complex spacings in math mode, and it seems indeed to be a complicated affair to construct a math font for TEX. When there are hundreds of free text fonts packaged for LATEX and a handful of math ones, chances are your favorite text font does not mix so well with the available math ones, so try out mathastext. The following

[2] 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.

[3] Text fonts are equipped with ligature rules. The French Cursive font for example has complex ligature rules and they make cohabitation with mathastext somewhat difficult in that case.

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. This can be done the following way:

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

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, 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).

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".[4] Of course it is always possible to leave the responsability to set up Greek letters in math mode to packages loaded previously to mathastext.

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 $\backslash$ glyphs. If mathastext detects OT1 as the default encoding it will leave these characters to their defaults from the math fonts.[5]

The present document illustrated the use of various fonts, so its preamble set-up is accordingly a bit more complicated:[6]

```
\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[7]: lmvtt, newcent, times, and helvet. The names can be taken arbitrarily (they only need to be suitable arguments to the LaTeX \DeclareMathVersion command which is invoked internally, so no spaces in the names). Two additional math versions preexist: the normal and bold, which, because there was the subdued option, were left untouched by mathastext.

[4] 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) cbfonts package.

[5] 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.

[6] I have removed the Greek and Symbol font related stuff. See the .dtx source for the real thing.

[7] math versions are discussed in the document fntguide.pdf from your TeX distribution.

Once these `math versions` are defined, `\MTversion{name_of_version}` in the *body* of the document enacts the font switches. As is usual with LaTeX one can limit the scope to the inside of a group, or also switch back to the main set-up through issuing `\MTversion{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 TeX 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.

The LaTeX command `\mathversion{`⟨*version_name*⟩`}` will change only the fonts used in math mode. It is recommended to use the package command `\MTversion{`⟨*version_name*⟩`}` which does additional things for math mode (especially in relation to the `subdued` situation), and also sets up the text fonts, in the manner described above.

It is sometimes not compatible with `mathastext` to load a font package after it, as we did here: the font package may contain instructions to 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.[8] But one can use instead `\renewcommand{\rmdefault}{epigrafica}`,[9] followed with `\Mathastext`, or also `\MTfamily{epigrafica}\Mathastext` which will only change the font in math. To use `epigrafica` for Greek, one can do for example `\MTgreekfont{epigrafica}\Mathastext` with package option `LGRgreek`. Or alternatively `\usepackage{epigrafica}` followed with `\usepackage[LGRgreek]{mathastext}`.

## 1.3 The `defaultmathsizes` option

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

## 1.4 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`.

[8] may typically give a 'too many math alphabets' error message.

[9] 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 arcanes of finding `.fd` files in one's TeX 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.

Nevertheless, soon after I posted the initial version of the package to CTAN, I was overwhelmed by numerous[10] questions[11] 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.[12] There is also an option `frenchmath` to make the uppercase letters nevertheless upright, because this is the way of traditional French mathematical typography.[13]

## 1.5 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 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* has to be activated by an explicit use of a `\MTversion` (also written `\Mathastextversion`) command in the document body, and the document preamble *must* contain at least one `\Mathastext` command (with the version name in square brackets) to define a math version (other than the `normal` and `bold`, which are subdued), to be later used in the body.

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 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 LaTeX 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 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 `eulergreek`, `symbolgreek` or `symbol`. But `LGRgreek` is receptive to it.

## 1.6 Basic example with math versions

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{newcent}
\usepackage[subdued]{mathastext}
\Mathastext[newcent]
```

[10] this means "more then one."

[11] I thank in particular Tariq Perwez and Kevin Klement for their kind remarks (chronological order).

[12] more precisely stated, the value of `\itdefault` is used.

[13] more precisely stated, the value of `\shapedefault` is used.

```
\renewcommand\familydefault\ttdefault
\Mathastext[courier]
\renewcommand\familydefault\sfdefault
\Mathastext[avantgarde]
\renewcommand\familydefault\rmdefault
\begin{document} text in NewCentury and $math\ as\ in\ default$,%
\MTversion{courier} text in Courier and $math\ in\ Courier$,%
\MTversion{avantgarde} text in AvantGarde and $math\ in\ AvantGarde$,%
\MTversion[newcent]{courier} text in NewCentury and $math\ in\
Courier$,\MTversion{bold} texte in bold NewCentury and $math\ as\ in\
bold\ default$,\MTversion[courier]{avantgarde} text in Courier and
$math\ in\ AvantGarde$.
\end{document}
```

The `newcent` package from the `psnfss` standard bundle of LaTeX font packages sets up New Century Schoolbook (NCS) for the serif font, Avant Garde for the sans font, and Courier for the typewriter font. The command `\usepackage[subdued]{mathastext}` does not change the `normal` math version, but when later invoked through `\MTversion{normal}` it will remember and reset the text font to be New Century Schoolbook. On the other hand `\MTversion{newcent}` is more radical as it sets up the math to also use Schoolbook. Each call to the `\Mathastext` command in the preamble registers the current font family, as given by the current `\familydefault` value. At first `\familydefault` is given as `\rmdefault`, so changing `\rmdefault` is another, indirect, manner to change which font will be associated by `mathastext` to the given version name. Remember though that if `\familydefault` points to some other value, changing `\rmdefault` will not be effective for the `\Mathastext` command. Just before `\begin{document}` we issue a last `\renewcommand` on `\familydefault` if we want the initial font to be used in the text to be roman one, here NCS.

The package provides other techniques to tell `\Mathastext` which fonts to use in a math version: see the explanations of the commands `\MTencoding`, `\MTfamily`, `\MTseries`, `\MTshape`, `\MTlettershape` in the section describing all package defined commands.

In the body of a document `\MTversion` (with a mandatory version name) does three things:[14] it changes the font for letters, digits, operator names in *math*; it changes the font for *text*; and it resets the `\(family,rm,sf,tt)default`s to their values as registered at the time of definition of the version. You may wish to limit its scope to the inside of some group, if it is to be used for the short portion of the document.

## 1.7 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 TeX installation: the Computer

[14] well, it also sets up the LGR Greek letters, in case of option LGRgreek, and it turns on the (math versions dependent) user-defined extra glue after ∃ and ∀.

Modern, Latin Modern, and the CM-LGC fonts; the Greek Font Society fonts (such as GFS Didot), the epigrafica and kerkis packages, the txfontsb package which extends the txfonts package with LGR-encoded Greek letters; the Droid fonts, the DejaVu fonts, the Comfortaa font, and the Open Sans font. The `LGR` encoded `CM/LM` fonts (in serif, sans-serif and typewriter family) give the nice Greek letters in upright shape from the `cbfonts` package. To get these letters in your `mathastext` math mode, you can do the following:

```
% 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`.

## 1.8 Shape of Greek letters

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

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

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

**no option:** the lowercase Greek letters are in the same shape as Latin letters, and the uppercase in the same shape as 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 TEX 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 LGRgreeks 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. . .

## 1.9 Unicode engines

mathastext has been made minimally unicode-aware and can be used with XeTEX or LuaLATEX, 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 XeTEX), 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 XeTEX or LuaLATEX 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.

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

Some of the functionality of **mathastext** is less fully realized under the LuaLaTeX engine than it is with XeTeX. This is temporary as I have been told that the needed feature of LuaLaTeX will be implemented in its next release.

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 TeX fonts, but due to the handling of the minus sign in math mode (in particular), it is best to have either only unicode fonts, or only old-fashioned TeX fonts in a fixed encoding (T1, or LY1 for example).

**Important:** `fontspec` must be loaded with its *no-math* option, and *prior* to **mathastext**.

The package was not extensively tested with unicode engines, but I include here two examples which compiled successfully with XeTeX and LuaLaTeX, the first one on a Linux machine, the second one on a Mac OS X machine.

```
\documentclass{article}
\usepackage[hscale=0.8]{geometry}
\usepackage{multicol}
\usepackage[no-math]{fontspec}
\usepackage{lmodern}
\usepackage[subdued,italic]{mathastext}
\setmainfont[Color=FF0000]{Andale Mono}  \Mathastext[Andale]
\setmainfont[Color=0000FF]{Arial}        \Mathastext[Arial]
\setmainfont[Color=00FF00]{DejaVu Serif} \Mathastext[DejaVu]
\MathastextDeclareVersion{times}{T1}{ptm}{m}{n}
\MTlettershape{n}\MTshape{it}
\setmainfont[Color=999999]{Verdana}      \Mathastext[Verdana]
\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{ !\,?\,*\,,\,.\,:\,;\,+\,-\,=\,(\,)\,[\,]\,/\,\#\,%
   \$\,\%\,\&\,<\,>\,|\,\{\,\}\,\char92 }
\end{multicols}}
\begin{multicols}2
   \centerline{\textbf{math mode}}
\columnbreak
   \centerline{ 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=00FF00]{Osaka}         \Mathastext[Osaka]
\setmainfont[Color=0000FF]{Herculanum}    \Mathastext[Herculanum]
\setmainfont[Color=FF00FF]{Didot}         \Mathastext[Didot]
\setmainfont[Color=999999]{Comic Sans MS} \Mathastext[Comic]
\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{ !\,?\,*\,,\,.\,:\,;\,+\,-\,=\,(\,)\,[\,]\,/\,\#\,%
   \$\,\%\,\&\,<\,>\,|\,\{\,\}\,\char92 }
\end{multicols}}
\begin{multicols}2
   \centerline{\textbf{math mode}}
\columnbreak
   \centerline{ text }
\end{multicols}
\TEST{Didot}\TEST{Comic}\TEST{normal}\TEST{Herculanum}
\TEST{Hoefler}\TEST{Osaka}\TEST{bold}
\end{document}
```

# 2 Package options and commands

## 2.1 Summary of main options

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

**subdued:** acts in a subdued way. The LaTeX 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 listed supra, other than letters and digits, are taken from the Symbol font. This option also makes a number of further glyphs available, including some basic mathematical arrows, as well as 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:** the default of `mathastext` is to declare bigger sizes in 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`, etc... (but not `\mathcal`) 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).

## 2.2 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 –. 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 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.[15] This specific issue will perhaps be fixed by some hypothetic 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 ' will appear as a prime ′.

**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 accross 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.

[15] 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 XeTeX/LuaLaTeX. 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.

**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).

**XeTeX and LuaLaTeX:** 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 LuaLaTeX (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 LaTeX and PdfLaTeX, there is no such limitation and all 8bit-encodings (containing these glyphs) should be ok.

**fontspec:** one more note to users of XeLaTeX/LuaLaTeX 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 `amsbsy` package). As it does not exist in the default LaTeX 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`.
- `\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).

Note though that it is not possible to use too many of such commands in the same document, due to some limitations of LaTeX.

**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 by `mathastext` at the time it is loaded. 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.

## 2.3 Commands

### 2.3.1 Preamble-only commands

Nothing is necessary besides loading `mathastext`, possibly with some customizing options. The following commands provide enhancements to the basic use of the package.

- \Mathastext: reinitializes mathastext according to the current defaults of encoding, family, series and shape.[16]
  - It can also be preceded optionally by one or more of[17] \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.
  - **math versions:** starting with version 1.12 \Mathastext accepts an optional argument, 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.[18]
- \MTWillUse[⟨*ltsh*⟩]{⟨*enc*⟩}{⟨*fam*⟩}{⟨*ser*⟩}{⟨*sh*⟩}: tells mathastext to use the font with the specified encoding, family, series, and shape for the letters and digits (and all other afflicted characters) in math mode. The optional argument ⟨*ltsh*⟩ specifies a shape for the letters, for example \itdefault, or directly ⟨*it*⟩ or ⟨*sc*⟩.
- \MTDeclareVersion[⟨*ltsh*⟩]{⟨*name*⟩}{⟨*enc*⟩}{⟨*fam*⟩}{⟨*ser*⟩}{⟨*sh*⟩}: declares that the document will have access to the font with the specified characteristics, under the math version name ⟨*name*⟩. For example:
  \MTDeclareVersion[sc]{palatino}{T1}{ppl}{b}{sl}
  declares under the name palatino a version where mathematics will be typeset using the Palatino font in T1-encoding, bold, slanted, and the letters will in fact be in caps and small caps (and bold).[19] When the optional argument is absent, and mathastext was loaded with the italic option, then the default letter shape will be it,[20] else letters will have the same shape as used for digits and operator-names.
- \MTboldvariant{⟨*var*⟩}: when used before \Mathastext, specifies which bold (b, sb, bx, ...) to be used by \mathbf (and \boldmath). Default is the \bfdefault at the time of loading mathastext. When used before the declaration of a version, decides the way \mathbf will act in this version.
- \MTEulerScale{⟨*factor*⟩}: scales the Euler font by ⟨*factor*⟩.
- \MTSymbolScale{⟨*factor*⟩}: scales the Symbol font by ⟨*factor*⟩.
- \MTitgreek, \MTupgreek, \MTitGreek, \MTupGreek: 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.

[16] updates also the font and shapes for the Greek letters (LGRgreek option), and the skips to be inserted after the symbols ∀ and ∃, see *infra*.

[17] these commands exist also with long names: \Mathastextencoding, etc... The same applies to the other commands mentioned in this section.

[18] The allowed version names are as for the LaTeX \DeclareMathVersion macro. Do not use "normal" or "bold"; this is already taken care of by a call to \Mathastext without optional argument.

[19] I do not especially recommend to use this in real life!

[20] 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.

- \MTgreekfont{⟨*fontfamily*⟩}: 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.

- \MTexistsskip{⟨*math glue*⟩}: specifies the amount of skip or more generally glue to put after each ∃ math symbol. Indeed, upright letters (or digits for that matter) often appear to be positioned a bit too close to the quantifier: ∃B. The package default is to add a 1mu skip (this default is set to zero in the case of italic): ∃B. One can change the default with the following syntax: \MTexistsskip{2mu plus 1mu minus 1mu}, which must be followed with a \Mathastext command (or \MTDeclareVersion), with or without version name, and will remain effective in all subsequently declared math versions. In the case of the option subdued, the skips are set to zero for the normal and bold math versions and the command has no effect for them. In the case of the option italic, the command has to be used, as the default skip is zero.

- \MTforallskip{⟨*math glue*⟩}: the default is to add a .6667mu math skip after each ∀ (except with the option italic for which the default is set to zero). Compare ∀F (has the skip) with ∀F (has no skip). Use this command 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 command has no effect for the normal and bold math versions. In the case of the option italic, the command must be used because the default skip is zero.

### 2.3.2 Commands to be used in the body

- \MTVersion[⟨*nametext*⟩]{⟨*namemath*⟩}:[21] 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, use the LaTeX command \mathversion.

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 ¯ 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. By default, the originals are identified with the new commands. The underlying internal LaTeX structures related to the original commands are not overwritten, and these commands can thus be stored with a \let before \usepackage{mathastext}, to be used in case of necessity (this is what option subdued does.)

[21] \MTVersion is also available as \MTversion.

- \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 LaTeX 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.

- Miscelleneous mathematical symbols from the postscript Symbol font are made available (or replaced) when option symbolmisc is passed. They are \prod $\prod$ \sum $\sum$ \implies $\Rightarrow$ \impliedby $\Leftarrow$ \iff $\Longleftrightarrow$ \shortiff $\Leftrightarrow$ \to $\to$ \longto $\longrightarrow$ \mapsto $\mapsto$ \longmapsto $\longmapsto$ \aleph $\aleph$ \inftypsy $\infty$ \emptyset $\emptyset$ \surd $\surd$ \nabla $\nabla$ \angle $\angle$ \forall $\forall$ \exists $\exists$ \neg $\neg$ \clubsuit $\clubsuit$ \diamondsuit $\diamondsuit$ \heartsuit $\heartsuit$ \spadesuit $\spadesuit$ \smallint $\smallint$ \wedge $\wedge$ \vee $\vee$ \cap $\cap$ \cup $\cup$ \bullet $\bullet$ \div $\div$ \otimes $\otimes$ \oplus $\oplus$ \pm $\pm$ \ast $\ast$ \times $\times$ \proptopsy $\propto$ \mid $\mid$ \leq $\leq$ \geq $\geq$ \approx $\approx$ \supset $\supset$ \subset $\subset$ \supseteq $\supseteq$ \subseteq $\subseteq$ \in $\in$ \sim $\sim$ \cong $\cong$ \perp $\perp$ \equiv $\equiv$ \notin $\notin$ \langle $\langle$ \rangle $\rangle$. And a \DotTriangle $\therefore$ is made available by option symbolre (which overwrites \Re and \Im: $\Re, \Im$). The \inftypsy and \proptopsy have these names to leave up to the user the choice to replace (or no) the original (larger) \infty $\infty$ and \propto $\propto$.

  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.

## 2.4 Complete list of options

- `basic`: only mathastextify letters and digits.
- `subdued`: do not change the default fonts or alphabets in math mode, turn on the `mathastext`-ification only after an explicit `\MTversion` command.
- `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.
- `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.
- `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 not do it. The option `nolessnomore` is activated by default in case of `OT1`-encoding.
- further excluding options: `noexclam` ! ? `noasterisk` * `nopunctuation` , . : ; `noplus`, `nominus`, `noplusnominus` + − `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.
- `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 ($\therefore$).
- `symbolmisc`: takes quite a few glyphs, including logical arrows, product and sum signs from Symbol. They are listed *supra*. A `\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 LaTeX, 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 modify, respectively, the `\mathbf`, `\mathit`, `\mathsf`, and `\mathtt` commands to use the mathastextified 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' LaTeX error.
- `defaulnormal`, `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 `defaultxx` 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 LaTeX 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