The mathgreeks package

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Contents

1 Introduction

The purpose of this package is to provide access to numerous Greek letter fonts for math mode, without altering other mathematical characters and symbols and without loading whole extensions that provide these fonts.

The commands \italpha, \itbeta... produce the italic forms of the chosen font, and \upalpha, \upbeta ... produce the upright forms. Style options allow choosing between italic or upright forms for the basic commands \alpha, \beta...Only letters whose glyph differs from the corresponding Roman letter will be defined this way. Therefore, the package does not provide a command \omicron, whose letter is identical to the Roman 'o', and only a few uppercase letters are defined: \Gamma, \Delta, \Theta...

An ISO recommendation, rarely followed, is to typeset uppercase Greek letters in italic shape, as for other variables [1]. This is automatically achieved, for some particular fonts, with packages such as fixmath by Walter Schmidt [4], isomath by Günter Milde [5] or pm-isomath by Claudio Beccari [6] and optionally with some others (such as mathpazo or mathptmx with the option slantedGreek). When running through LuaLaTeX or XeLaTeX you can also get this result with the option math-style=ISO provided by the unicode-math package [2].

Furthermore there are several packages that provide the uppercase Greek letters in italic and have also options to typeset the lowercase Greek letters in upright shape. Notably, let us mention mathdesign [8], kpfonts [9], fourier [10], but also pxgreeks (using pxfonts [11]), txgreeks (using txfonts [12]), libertinust1math [19], libgreek, etc. A special mention goes to lgrmath of Jean-François Burnol [17] which allows the use of any Greek LGR-encoded font in math mode, an idea taken up in mathgreeks. Also note newtxmath [18] which has several font options. For upright lowercase letters, we have the nice upgreek [7] package.

The interest of mathgreeks lies in being able to choose the Greek letters font from one of these packages or from a TrueType or OpenType font installed on your computer. The package sets Greek letters in the desired font and shape and enables to change font or shape dynamically within the document.

2 Options and settings

2.1 Package options

When calling the package, there are three types of options:

- Font options,

- Shape options (the style),

- Additional options.

These options use the 'key=value' mechanism. When a default value is set, the key can be used without specifying a value (which will then be the default value). Some keys represent booleans with the default value being 'true'.

The first table, in two parts, presents the different keys corresponding to font options, the list of possible values (complete when it is reduced). The default value is indicated in bold, the second part consist in boolean options. Results are presented in section 3.

Option	Values		Booleans
lgrmath	Alegreya-LF, Cochineal-LF, **fcm**…		fourier
fontspec	FreeSerif, **GFS Didot**, Cambria…		pxfonts
unicode-math	**Latin Modern Math**, STIX Two Math…		txfonts
upgreek	Euler, **Symbol**, Symbolsmallscale		libertinus
mathdesign	Utopia, Garamond, **Charter**		concrete
kpfonts	**normal**, light		cmbright

Table 1: font options

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The `fontspec` and `unicode-math` options require loading the corresponding packages, and these can only work when running through LuaLaTeX (or XeLaTeX). The fontspec option allows for the use of most TrueType or OpenType fonts installed on your computer, those that have Greek letters.

When calling `\boldmath` (outside the math environment), you get the letters in bold face, but the command `\mathbf` doesn't work here.

The second table below presents the shape options. If the shape option is not specified, the italic shape is chosen by default, meaning that the commands `\alpha`, `\beta`, ..., `\Delta`, `\Gamma`...will produce the same result as the corresponding `\it⟨letter⟩` commands.

Option	Description
greekup	lowercase letters in upright shape
Greekup	uppercase letters in upright shape
TeX	lowercase=italic, uppercase=upright
ISO	lowercase=italic, uppercase=italic
upright	lowercase=upright, uppercase=upright
style	possible values: TeX, ISO, upright

Table 2: shape options

- Except for `style`, all these options are booleans.

- The `Greekup` option est initialized to `true` (corresponding to the `TeX` style).

- The `style=ISO` option produces the same result as the simple `ISO` option, and the same applies to the other two styles (`TeX`, `upright`).

- To get lowercase letters in upright shape and uppercase letters in italic, activate

$$\text{greekup=true,Greekup=false.}$$

The following list presents the additional options, which are also booleans:

savegreeks Saves the letters corresponding to the original commands `\alpha`, `\beta`...so that they remain accessible through the commands `\backalpha`, `\backbeta`...

otherfonts Allows dynamic font switching (see next section) for later use of `lgrmath`, `fourier`, `libertinus` or `upgreek`.

lowercase This option is initialized to `true`; `lowercase=false` allows keeping the original lowercase Greek letters without redefining the commands `\alpha`, `\beta`...

uppercase This option is initialized to `true`; `uppercase=false` allows keeping the original uppercase Greek letters without redefining the commands `\Gamma`, `\Delta`...

2.2 Dynamic settings commands

There are two command for dynamic settings:

\setmathgreeks This command takes a mandatory parameter which is a list of 'key=value' settings among the shape options presented in table 2 (the other options are not usable in this command). This allows modifying these settings in the body of the document, with a global effect, or local if the command is called in an environment or a group (delimited by braces).

\mathgreeksfont This command allows modifying the font of Greek letters throughout the document, with a global or local effect. The possible options fall into two categories:

fontspec, unicode-math,
enc, fam, series, shape.

The fontspec and unicode-math options are identical to those in table 1. The other previous font options (lgrmath, mathdesign, etc.) are not usable in \mathgreeksfont. However, these fonts can be obtained by specifying the encoding (option enc), family (option fam), series and shape: the New Font Selection Scheme (NFSS). The series defines the 'boldness' and has a default value: series=m (medium). For the shape, the default value is shape=it; enc and fam have no default value. For example,

\mathgreeksfont{enc=OML,fam=mdbch,shape=n}

will produce upright letters from the Charter font provided by mathdesign. For each font option seen previously, the following examples (section 3) indicates the values to give to enc, fam, and shape. The font definition by NFSS attributes will not produce specific commands for italics \it⟨letter⟩ or for upright letters \up⟨letter⟩. Only the commands \alpha, \beta…will be redefined according to the selected shape.

If you use the fontspec or unicode-math option, these second kind of options have no effect.

Notice that the encoding obtained by the package font options is faster, moreover the command \boldmath doesn't work anymore when changing the font with enc, fam and shape, but you can obtain the boldface letters with series=b, or series=bx (bold extended).

3 Examples

\greektable The examples in this section are obtained with the \greektable command. This command generates a table with two rows: the first contains the lowercase letters obtained with \alpha, …, \omega, and the second contains variants \varepsilon, \vartheta…of certain letters as well as the uppercase letters obtained with \Gamma, \Delta, …, \Omega (for those who differ from their Latin equivalent).

3.1 PostScript font options

The `upgreek` option, as its name suggests, produces only upright letters, and the `Euler` font does not have the variants \varrho and \varsigma. The `Symbolsmallscale` font is identical to Symbol but reduced in size by 90 %. `mathdesign=Garamond` yields a virtual font that may not always work.

upgreek=...	Résult	enc	fam	shape
Symbol	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω υ ϑ ϖ ρ σ φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	U	psy	n
Symbolsmallscale	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω υ ϑ ϖ ρ σ φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	U	fsy	n
Euler	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	U	eur	n

mathdesign=...	Résult	enc	fam	shape
Utopia	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdput	it
	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdput	n
Garamond	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdugm	it
	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdugm	n
Charter	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdbch	it
	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	mdbch	n

kpfonts=...	Résult	enc	fam	shape
normal	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	jkp	it
	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	U	jkpmia	it
light	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML	jkpl	it
	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ ϖ ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	U	jkplmia	it

Boolean options	Résult	enc	fam	shape
fourier	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	FML	futmi	it
	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	FML	futm	it
pxfonts	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	OML	pxmi	it
	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	U	pxmia	it
txfonts	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	OML	txmi	it
	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	U	txmia	it
libertinus	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	LS1	*	it
	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	LS1	*	n
concrete	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	OML	ccl	it
cmbright	$\alpha\,\beta\,\gamma\,\delta\,\epsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varepsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\varphi\mid\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$	OML	cmbrm	it

* The asterisk for the `libertinus` value corresponds to the `libertinust1math` family, a name too long to appear in this table.

3.2 The `lgrmath` option

The `lgrmath` option, inspired by the eponymous package developed by J.F. Burnol, has a large number of possible values. We present here only a few. The documentation of the `lgrmath` package [17] explains how to list and consult the fonts available on your distribution with the LGR encoding. One can also consult with profit the documentation of cb-fonts[13], the Greek fonts of Claudio Beccari.

With the `lgrmath` option, the alternative commands for the variants produce the same glyphs as those of the normal letters except for `\varsigma`.

We have not presented here the third column previously indicating the values for `enc`, `fam`, and `shape` because, for this entire section, we have `enc=LGR`, `fam=⟨font-name⟩`, the name of the font presented, and `shape=it`, for the italic shape, or `shape=n`, for the upright shape. Example:

```
\mathgreeksfont{enc=LGR,fam=Alegreya-LF,shape=n}
```

lgrmath=...	Résult
Alegreya-LF	α β γ δ ε ζ η ϑ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
Cochineal-LF	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
LibertinusSans-LF	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
NotoSerif-LF	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
NotoSans-LF	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
droidserif	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
fcm	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε ϑ π ϱ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
gentium	α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω ε θ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
llcmss	α β γ δ ε ζ η ϑ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε ϑ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω α β γ δ ε ζ η ϑ ι κ λ μ ν ξ π ρ ς τ υ φ χ ψ ω ε ϑ π ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω

3.3 The `fontspec` option

Most TrueType or OpenType fonts can be used here. Some of the fonts below are not free, and some do not have the variants `\varepsilon`…for example Arial, Times New Roman.

fontspec=...	Résult
DejaVu Serif	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
DejaVu Sans	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
FreeSerif	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
FreeSans	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
GFS Artemisia	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,n\,\vartheta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\varrho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\theta\,\varpi\,\;\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,n\,\vartheta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\varrho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\theta\,\varpi\,\square\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
GFS Didot	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\varkappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\vartheta\,\omega\,\square\,\varsigma\,\varphi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\varkappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\vartheta\,\varpi\,\square\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Liberation Serif	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Liberation Sans	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$

fontspec=...	Résult
Linux Libertine O	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Arial	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\square\,\square\,\square\,\varsigma\,\square\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\square\,\square\,\square\,\varsigma\,\square\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Cambria	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Palatino Linotype	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\text{➤}\,\vartheta\,\varpi\,\text{➤}\,\varsigma\,\varphi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\text{◉}\,\vartheta\,\varpi\,\text{◉}\,\varsigma\,\varphi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Times New Roman	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\square\,\square\,\square\,\varsigma\,\square\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\square\,\square\,\square\,\square\,\varsigma\,\square\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$

3.4 The `unicode-math` option

unicode-math=...	Résult
Latin Modern Math	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
STIX Two Math	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
Fira Math	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\varphi\,\chi\,\psi\,\omega$ $\epsilon\,\vartheta\,\varpi\,\varrho\,\varsigma\,\phi\,\mid\,\Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$

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