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
`lgrmath`	`Alegreya-LF, Cochineal-LF, fcm…`
`fontspec`	`FreeSerif, GFS Didot, Cambria…`
`unicode-math`	**`Latin Modern Math`**`, STIX Two Math…`
`upgreek`	`Euler, Symbol, Symbolsmallscale`
`mathdesign`	`Utopia, Garamond, Charter`
`kpfonts`	**`normal`**`, light`

Booleans
`fourier`
`pxfonts`
`txfonts`
`libertinus`
`concrete`
`cmbright`

Table 1: font options

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. Although the unicode-math package loads the fontspec package, the fonts usable with one of these options are not necessarily usable with the other; `fontspec` has a large number of possible values.

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

  `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`.

`libsans` This is a special option that works only with `libertinus` to produce a sanserif font.

`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 commands 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. In that case, the shape is set by `\setmathgreeks` (before or after). The other previous font options (`lgrmath`, `mathdesign`, `fourier`, 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.

When using the `fontspec` or `unicode-math` option, these NFSS 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 following examples are produced 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 %; `Symbol` and `Symbolsmallscale` have no bold version. For several fonts, the upright shape is obtained with the attribute `shape=it` and not `shape=n`.

upgreek=...	Result	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=...	Result	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* 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 OML	mdput mdput	it 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* 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 OML	mdugm mdugm	it 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* 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 OML	mdbch mdbch	it n

kpfonts=...	Result	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 ω 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 ω ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML U	jkp jkpmia	it 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 ω 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 ω ρ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω	OML U	jkpl jkplmia	it it

Boolean options	Result	enc	fam	shape
fourier	$\alpha\ \beta\ \gamma\ \delta\ \epsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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	FML	futmi	it
		FML	futm	it
pxfonts	$\alpha\ \beta\ \gamma\ \delta\ \epsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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	pxmi	it
		U	pxmia	it
txfonts	$\alpha\ \beta\ \gamma\ \delta\ \epsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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	txmi	it
		U	txmia	it
libertinus	$\alpha\ \beta\ \gamma\ \delta\ \epsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ Y\ \Phi\ \Psi\ \Omega$ 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	LS1	*	it
		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 asterisks for the* **libertinus** *family corresponds to* 'libertinust1math' *a name too long to appear in this table. Activating the* `libsans` *package option yields a sanserif font.*

3.2 The `lgrmath` option

The `lgrmath` option, inspired by the eponymous package of 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 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`. However, the `\varsigma` ς often substitutes for the usual `\sigma` σ when using dynamic font changes through `\mathgreeksfont` with `enc=LGR`.

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=...	Result
Alegreya-LF	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \vartheta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
Cochineal-LF	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
LibertinusSerif-LF	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
LibertinusSans-LF	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
NotoSerif-LF	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
droidserif	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \phi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \phi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
fcm	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \vartheta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \varrho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \vartheta\ \pi\ \varrho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
gentium	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$
lmss	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ $\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \varsigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\varepsilon\ \theta\ \pi\ \rho\ \varsigma\ \varphi \mid \Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$

3.3 The `fontspec` option

Most TrueType or OpenType fonts can be used here. Some of the fonts below are non free, and some do not have all the variants, for example Arial, Palatino Linotype, Times New Roman.

fontspec=...	Result
DejaVu Serif	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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
DejaVu Sans	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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
FreeSerif	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \varrho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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
FreeSans	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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
GFS Artemisia	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \vartheta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \varrho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\theta\ \varpi\ \ \varsigma\ \varphi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ α β γ δ ε ζ η ϑ ι κ λ μ ν ξ π ϱ σ τ υ φ χ ψ ω □ θ ϖ □ ς φ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
GFS Didot	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \varkappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ □ $\vartheta\ \omega$ □ $\varsigma\ \varphi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ α β γ δ ε ζ η θ ι κ λ μ ν ξ π ρ σ τ υ φ χ ψ ω □ ϑ ϖ □ ς ϕ | Γ Δ Θ Λ Ξ Π Σ Υ Φ Ψ Ω
Liberation Serif	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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
Liberation Sans	$\alpha\ \beta\ \gamma\ \delta\ \varepsilon\ \zeta\ \eta\ \theta\ \iota\ \kappa\ \lambda\ \mu\ \nu\ \xi\ \pi\ \rho\ \sigma\ \tau\ \upsilon\ \varphi\ \chi\ \psi\ \omega$ $\epsilon\ \vartheta\ \varpi\ \varrho\ \varsigma\ \phi$ | $\Gamma\ \Delta\ \Theta\ \Lambda\ \Xi\ \Pi\ \Sigma\ \Upsilon\ \Phi\ \Psi\ \Omega$ 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

fontspec=...	Result
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	$\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\rho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varsigma\,\vartheta\,\omega\,\varsigma\,\varsigma\,\varphi \mid \Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$ $\alpha\,\beta\,\gamma\,\delta\,\varepsilon\,\zeta\,\eta\,\theta\,\iota\,\kappa\,\lambda\,\mu\,\nu\,\xi\,\pi\,\varrho\,\sigma\,\tau\,\upsilon\,\phi\,\chi\,\psi\,\omega$ $\varsigma\,\vartheta\,\omega\,\varsigma\,\varsigma\,\varphi \mid \Gamma\,\Delta\,\Theta\,\Lambda\,\Xi\,\Pi\,\Sigma\,\Upsilon\,\Phi\,\Psi\,\Omega$
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=...	Result
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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