XCharter-Math

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1 What is XCharter-Math?

XCharter-Math is an OpenType maths font based on Bitstream Charter meant to be used with XCharter text fonts.

Latin and Greek letters and many maths symbols are borrowed or derived from Michael Sharpe's XCharter fonts. Other sources for maths glyphs were found in MathDesign (by Paul Pichaureau) and Fourier-GUT*enberg* (by Michel Bovani).

It requires LuaTeX or XeTeX as engine and the `unicode-math` package[1].

Please note that the current version (0.65) is *experimental, do expect metrics and glyphs to change* until version 1.0 is reached. Comments, suggestions and bug reports are welcome!

2 Usage

2.1 Calling `\setmathfont`

A basic call for XCharter-Math would be:

```
\usepackage{unicode-math}
\setmathfont{XCharter-Math.otf} % Call by file name or
\setmathfont{XCharter Math}     % Call by font name
```

this loads XCharter-Math as maths font[2] with the default options, see subsections 3.1 on page 3, 3.2 on page 4 and 3.3 on page 5 for customisation.

Please note that the three sets of text fonts have to be chosen separately, f.i.:

[1] Please read the documentation `unicode-math.pdf`.

[2] Both calls work equally well with LuaTeX; with XeTeX a call by font name will fail unless the font is declared as a *system font*.

```
\setmainfont{XCharter}                                % rm
\setsansfont{Cabin}[Scale=MatchLowercase]             % sf
\setmonofont{Inconsolatazi4}[Scale=MatchLowercase] % tt
```

otherwise you would get Latin Modern for text fonts.

2.2 Calling `xcharter-otf.sty` (recommended)

As an alternative to load XCharter-Math you can type:

`\usepackage[` *options* [3] `]{xcharter-otf}`

it loads `unicode-math` with the default options, sets XCharter-Math as maths font and XCharter Text fonts as Roman fonts (families *sf* and *tt* left unchanged) and does a bit more:

1. it loads `realscripts` for better looking superscripts and footnote calls unless option `fakedscripts` has been activated;
2. it checks at `\begin{document}` if packages `amssymb` or `latexsym` are loaded and issues warnings in case they are;
3. it provides aliases for glyphs named differently in Unicode, so that `latexsym` or AMS names are also available;
4. it defines specific maths characters like `\varemptyset` (∅), `\parallelslant` (⫽), `\shortparallelslant` (⫻), etc.;
5. it reduces spacing in maths mode: `\thinmuskip`, `\medmuskip` and `\thickmuskip` unless the `loose` option is activated.

Apart from the `loose` option mentioned above, `xcharter-otf.sty` provides two options `no-text` and `Scale=`<*decimal*> meant to be used to load the XCharter-Math font together with roman text fonts other than XCharter, while keeping the advantages 1. to 5. pointed in the preceding list, f.i.

```
\usepackage[no-text,Scale=0.98]{xcharter-otf}
```

Option `no-text` can also be useful if XCharter is to be loaded with specific options, f.i.

```
\usepackage[no-text]{xcharter-otf}
\setmainfont{XCharter}[RawFeature=+onum;+ss01]
```

3 What is provided?

XCharter-Math provides the most common `unicode-math` glyphs and all glyphs available in the `amssymb` and `latexsym` packages. Therefore, the latter two packages *should not* be loaded as they might override XCharter-Math glyphs.

[3] Possible *options* are `loose`, `no-text`, `fakedscripts`,`Scale=` or any of the options described in sections 3.1, 3.2 and 3.3.

Sans-serif, typewriter and fraktur alphabets are borrowed from Latin Modern fonts. See in section 3.6 on page 8 how to choose from other maths fonts for these styles.

A full list of available glyphs is shown in file `unimath-xcharter.pdf`.

3.1 Upright or slanted?

Package `unicode-math` follows TEX conventions for Latin and Greek letters: in maths mode, the default option (`math-style=TeX`) prints Latin letters $a\ldots z$ $A\ldots Z$ and lowercase Greek letters $\alpha\ldots\omega$ slanted (italic) while uppercase Greek letters $\mathit{AB}\Gamma\ldots\Omega$ are printed upright. This can be changed by option `math-style` as shown in table 1.

Table 1: Effects of the `math-style` package option.

Package option	Latin	Greek
`math-style=ISO`	(a,z,B,X)	$(\alpha,\beta,\Gamma,\Xi)$
`math-style=TeX`	(a,z,B,X)	$(\alpha,\beta,\Gamma,\Xi)$
`math-style=french`	$(a,z,\mathrm{B},\mathrm{X})$	$(\alpha,\beta,\Gamma,\Xi)$
`math-style=upright`	$(\mathrm{a},\mathrm{z},\mathrm{B},\mathrm{X})$	$(\alpha,\beta,\Gamma,\Xi)$

Bold letters are printed upright except lowercase Greek letters which are slanted (the default option is `bold-style=TeX`). This can be changed by option `bold-style` as shown in table 2.

Table 2: Effects of the `bold-style` package option.

Package option	Latin	Greek
`bold-style=ISO`	$(\boldsymbol{a},\boldsymbol{z},\boldsymbol{B},\boldsymbol{X})$	$(\boldsymbol{\alpha},\boldsymbol{\beta},\boldsymbol{\Gamma},\boldsymbol{\Xi})$
`bold-style=TeX`	$(\mathbf{a},\mathbf{z},\mathbf{B},\mathbf{X})$	$(\boldsymbol{\alpha},\boldsymbol{\beta},\mathbf{\Gamma},\mathbf{\Xi})$
`bold-style=upright`	$(\mathbf{a},\mathbf{z},\mathbf{B},\mathbf{X})$	$(\boldsymbol{\alpha},\boldsymbol{\beta},\mathbf{\Gamma},\mathbf{\Xi})$

Other possible customisation: ∇ is printed upright and ∂ is printed slanted by default, but `nabla=italic` and `partial=upright` can change this.

All these options are offered by the `unicode-math` package, they can be added to the `\setmathfont` call as well[4], for example:

`\setmathfont{XCharter-Math.otf}[math-style=french,partial=upright]`

will print for the code

```
\[ \frac{\partial f}{\partial x} = \alpha \symbf{V} + a\nabla\Gamma
                                 + \symbf{\beta}\symbf{M} \]
```

$$\frac{\partial f}{\partial x} = \alpha\mathbf{V} + a\nabla\Gamma + \boldsymbol{\beta}\mathbf{M}$$

[4]IMHO it is easier to add *all options* to the `\setmathfont` command.

while the default settings would print

$$\frac{\partial f}{\partial x} = \alpha\mathbf{V} + a\nabla\Gamma + \boldsymbol{\beta}\mathbf{M}$$

Both shapes remain available anytime: `$\uppi, \itpi$` prints π, π.

If your text editor is able to handle Greek letters or maths symbols, they can be entered in the code instead control sequences (i.e. α, β, Γ,… for `\alpha`, `\beta`, `\Gamma`,…).

3.2 Character variants

XCharter-Math provides fourteen "Character Variants" options, listed on table 3, to choose between different glyphs for Greek characters and some others. Alternative calligraphic capitals for E, Q and T have been added (version 0.50) and an alternative italic v, easier to distinguish from ν (version 0.51).

Table 3: Character variants.

	Default	Variant	Name
cv00	0	𝟎	0
cv01	ℏ	ℏ	`\hslash`
cv02	∅	∅	`\emptyset`
cv03	ϵ	ε	`\epsilon`
cv04	κ	$\varkappa$	`\kappa`
cv05	π	ϖ	`\pi`
cv06	ϕ	φ	`\phi`
cv07	ρ	ϱ	`\rho`
cv08	σ	ς	`\sigma`
cv09	θ	ϑ	`\theta`
cv10	Θ	ϴ	`\Theta`
cv11	ν	$\upnu$	v
cv12	w	$\upw$	w
cv20	$\mathscr{E}$	$\mathscr{E}$	`\symcal{E}`
cv21	$\mathscr{Q}$	$\mathscr{Q}$	`\symcal{Q}`
cv22	$\mathscr{T}$	$\mathscr{T}$	`\symcal{T}`

For instance, to get `\epsilon` and `\phi` typeset as ε and φ instead of ϵ and ϕ, you can add option `CharacterVariant={3,6}` to the `\setmathfont` call:

```
\setmathfont{XCharter-Math.otf}[CharacterVariant={3,6}]
```

This works for all shapes and weights of these characters: f.i. `$\symbf{\epsilon}$`, `$\symbf{\phi}$` are output as $\boldsymbol{\varepsilon}$, $\boldsymbol{\varphi}$ instead of $\boldsymbol{\epsilon}$, $\boldsymbol{\phi}$.

Similarly with `math-style=french`, `\epsilon` and `\phi` are output as ε and φ (upright).

Please note that curly braces are mandatory whenever more than one “Character Variant” is selected.

Note about \hbar (v 0.43): unicode-math defines \hbar as \hslash (U+210F) while amsmath provides two different glyphs (italic *h* with horizontal or diagonal stroke). xcharter math now follows unicode-math; the italic *h* with horizontal stroke can be printed using \hslash or \hbar together with character variant cv01 or with \mithbar (replacement for AMS' command \hbar).

3.3 Stylistic sets

XCharter-Math provides five “Stylistic Sets” options to choose between different glyphs for families of maths symbols.

StylisticSet=4, alias[5] Style=leqslant, converts large inequalities into their slanted variants, see table 5a.

StylisticSet=5, alias Style=smaller, converts some symbols into their smaller variants, see table 5b.

Table 4: Stylistic Sets 4 and 5

(a) Style=leqslant (+ss04)

Command	Default	Variant
\leq	≤	⩽
\geq	≥	⩾
\nleq	≰	⪇
\ngeq	≱	⪈
\leqq	≦	≦
\geqq	≧	≧
\nleqq	≦̸	≦̸
\ngeqq	≧̸	≧̸
\eqless	⋚	⪕
\eqgtr	⋛	⪖
\lesseqgtr	⋚	⋚
\gtreqless	⋛	⋛
\lesseqqgtr	⪋	⪋
\gtreqqless	⪌	⪌

(b) Style=smaller (+ss05)

Command	Default	Variant
\in	∈	∈
\ni	∋	∋
\mid	∣	∣
\nmid	∤	∤
\parallel	∥	∥
\nparallel	∦	∦
\parallelslant	⫽	⫽
\nparallelslant	⫽̸	⫽̸

StylisticSet=6, alias Style=subsetneq, converts some inclusion symbols, as shown in table 6a on the next page.

StylisticSet=7, alias Style=parallelslant, converts “parallel” symbols into their slanted variants, see table 6b on the following page.

To enable Stylistic Sets 4, 6 and 7 for XCharter-Math, you should enter

[5]These Style aliases are provided by xcharter-otf.sty.

Table 5: Stylistic Sets 6 and 7

(a) `Style=subsetneq (+ss06)`

Command	Default	Variant
`\subsetneq`	$\subsetneq$	$\subsetneq$
`\supsetneq`	$\supsetneq$	$\supsetneq$
`\subsetneqq`	$\subsetneqq$	$\subsetneqq$
`\supsetneqq`	$\supsetneqq$	$\supsetneqq$

(b) `Style=parallelslant (+ss07)`

Command	Default	Variant
`\parallel`	$\parallel$	$\parallel$
`\nparallel`	$\nparallel$	$\nparallel$
`\shortparallel`	$\shortparallel$	$\shortparallel$
`\nshortparallel`	$\nshortparallel$	$\nshortparallel$

```
\setmathfont{XCharter-Math.otf}[StylisticSet={4,6,7}]  or
\usepackage[Style={leqslant,subsetneq,parallelslant}]{xcharter-otf}
```

then, `\[x\leq y \quad A \subsetneq B \quad D \parallel D'\]` will print as

$$x \leqslant y \quad A \subsetneq B \quad D \parallel D'$$

instead of

$$x \leq y \quad A \subsetneq B \quad D \parallel D'$$

`StylisticSet=3`, alias[6] `Style=upint`, converts integrals signs into their upright variants, see table 6.

Table 6: Style=upint (+ss03)

Command	`\int`	`\iint`	`\iiint`	`\iiiint`	`\oint`	`\oiint`	`\oiiint`
Default	$\int$	$\iint$	$\iiint$	$\iiiint$	$\oint$	$\oiint$	$\oiiint$
Upright	$\upint$	$\upiint$	$\upiiint$	$\upiiiint$	$\upoint$	$\upoiint$	$\upoiiint$

Command	`\intclockwise`	`\awint`	`\varointclockwise`	`\ointctrclockwise`
Default	$\intclockwise$	$\awint$	$\varointclockwise$	$\ointctrclockwise$
Upright	$\upintclockwise$	$\upawint$	$\upvarointclockwise$	$\upointctrclockwise$

3.4 Other font features

To get oldstyle numbers in maths, the feature `+onum` is available:

[6] These `Style` aliases are provided by `xcharter-otf.sty`.

```
\setmathfont{XCharter-Math.otf}[Numbers=OldStyle]  or
\usepackage[Style=fulloldstyle]{xcharter-otf}
```

0123456789, **0123456789**

3.5 Standard LaTeX math commands

All standard LaTeX maths commands, all `amssymb` commands and all `latexsym` commands are supported by XCharter-Math, for some of them loading `xcharter-otf.sty` is required.

Various wide accents are also supported:

☞ `\wideoverbar` and `\mathunderbar`[7]

$$\overline{x}\quad\overline{xy}\quad\overline{xyz}\quad\overline{A\cup B}\quad\overline{A\cup(B\cap C)\cup D}\quad\underline{m+n+p}$$

☞ `\widehat` and `\widetilde`

$$\hat{x}\;\widehat{xx}\;\widehat{xxx}\;\widehat{xxxx}\;\widehat{xxxxx}\;\widehat{xxxxxx}\;\tilde{x}\;\widetilde{xx}\;\widetilde{xxx}\;\widetilde{xxxx}\;\widetilde{xxxxx}\;\widetilde{xxxxxx}$$

☞ `\widecheck` and `\widebreve`

$$\breve{x}\quad\widecheck{xxxx}\quad\widecheck{xxxxxx}\quad\breve{x}\quad\widebreve{xxxx}\quad\widebreve{xxxxxx}$$

☞ `\overparen` and `\underparen`

$$\overset{\frown}{x}\quad\overset{\frown}{xy}\quad\overset{\frown}{xyz}\quad\overset{\frown}{A\cup B}\quad\overset{\frown}{A\cup(B\cap C)\cup D}\quad\overset{\frown}{x+y}^{2}\quad\overset{\frown}{a+b+\ldots+z}^{26}$$

$$\underset{\frown}{x}\quad\underset{\frown}{xz}\quad\underset{\frown}{xyz}\quad\underset{\frown}{x+z}_{2}\quad\underset{\frown}{a+b+\ldots+z}_{26}$$

☞ `\overbrace` and `\underbrace`

$$\overbrace{a}\quad\overbrace{ab}\quad\overbrace{abc}\quad\overbrace{abcd}\quad\overbrace{abcde}\quad\overbrace{a+b+c}^{3}\quad\overbrace{a+b+\ldots+z}^{26}$$

$$\underbrace{a}\quad\underbrace{ab}\quad\underbrace{abc}\quad\underbrace{abcd}\quad\underbrace{abcde}\quad\underbrace{a+b+c}_{3}\quad\underbrace{a+b+\ldots+z}_{26}$$

☞ `\overbracket` and `\underbracket`

$$\overline{a}\quad\overline{ab}\quad\overline{abc}\quad\overline{abcd}\quad\overline{abcde}\quad\overline{a+b+c}^{3}\quad\overline{a+b+\ldots+z}^{26}$$

$$\underline{a}\quad\underline{ab}\quad\underline{abc}\quad\underline{abcd}\quad\underline{abcde}\quad\underline{a+b+c}_{3}\quad\underline{a+b+\ldots+z}_{26}$$

[7] `\overline` and `\underline` are not font related, they are based on `\rule`.

☞ `\overrightarrow` and `\overleftarrow`

$$\vec{v} \quad \overrightarrow{M} \quad \overrightarrow{vv} \quad \overrightarrow{AB} \quad \overrightarrow{ABC} \quad \overrightarrow{ABCD} \quad \overrightarrow{ABCDEFGH}.$$

$$\overleftarrow{v} \quad \overleftarrow{M} \quad \overleftarrow{vv} \quad \overleftarrow{AB} \quad \overleftarrow{ABC} \quad \overleftarrow{ABCD} \quad \overleftarrow{ABCDEFGH}$$

☞ `\overrightharpoon` and `\overleftharpoon`

$$\vec{v} \quad \overrightharpoon{M} \quad \overrightharpoon{vv} \quad \overrightharpoon{AB} \quad \overrightharpoon{ABC} \quad \overrightharpoon{ABCD} \quad \overrightharpoon{ABCDEFGH}.$$

$$\overleftharpoon{v} \quad \overleftharpoon{M} \quad \overleftharpoon{vv} \quad \overleftharpoon{AB} \quad \overleftharpoon{ABC} \quad \overleftharpoon{ABCD} \quad \overleftharpoon{ABCDEFGH}$$

☞ `\underrightarrow` and `\underleftarrow`

$$\underrightarrow{v} \quad \underrightarrow{M} \quad \underrightarrow{vv} \quad \underrightarrow{AB} \quad \underrightarrow{ABC} \quad \underrightarrow{ABCD} \quad \underrightarrow{ABCDEFGH}.$$

$$\underleftarrow{v} \quad \underleftarrow{M} \quad \underleftarrow{vv} \quad \underleftarrow{AB} \quad \underleftarrow{ABC} \quad \underleftarrow{ABCD} \quad \underleftarrow{ABCDEFGH}$$

☞ `\underrightharpoon` and `\underleftharpoondown`

$$\underrightharpoon{v} \quad \underrightharpoon{M} \quad \underrightharpoon{vv} \quad \underrightharpoon{AB} \quad \underrightharpoon{ABC} \quad \underrightharpoon{ABCD} \quad \underrightharpoon{ABCDEFGH}.$$

$$\underleftharpoon{v} \quad \underleftharpoon{M} \quad \underleftharpoon{vv} \quad \underleftharpoon{AB} \quad \underleftharpoon{ABC} \quad \underleftharpoon{ABCD} \quad \underleftharpoon{ABCDEFGH}.$$

☞ Finally `\widearc` and `\overrightarc` (loading `xcharter-otf.sty` is required)

$$\widearc{AMB} \quad \overrightarc{AMB}$$

All the extensible arrows provided by the `mathtools` package are available in the XCharter-Math font (loading `xcharter-otf.sty` is required), f.i.:

$$X \xLeftrightarrow{\text{above}} Y \xhookrightarrow[\text{under}]{} Z \xmapsto{\text{above}} W$$

3.6 Mathematical alphabets

☞ All Latin and Greek characters are available in italic, upright, bold and bold italic via the `\symit{}`, `\symup{}`, `\symbf{}` and `\symbfit{}` commands.

☞ Calligraphic alphabet (`\symscr` or `\symcal` or `\mathcal` command), uppercase:
$\mathcal{A}\mathcal{B}\mathcal{C}\mathcal{D}\mathcal{E}\mathcal{F}\mathcal{G}\mathcal{H}\mathcal{I}\mathcal{J}\mathcal{K}\mathcal{L}\mathcal{M}\mathcal{N}\mathcal{O}\mathcal{P}\mathcal{Q}\mathcal{R}\mathcal{S}\mathcal{T}\mathcal{U}\mathcal{V}\mathcal{W}\mathcal{X}\mathcal{Y}\mathcal{Z}$
also in boldface (`\symbfscr`,`\symbfcal` or `\mathbfcal` command):
$\boldsymbol{\mathcal{A}\mathcal{B}\mathcal{C}\mathcal{D}\mathcal{E}\mathcal{F}\mathcal{G}\mathcal{H}\mathcal{I}\mathcal{J}\mathcal{K}\mathcal{L}\mathcal{M}\mathcal{N}\mathcal{O}\mathcal{P}\mathcal{Q}\mathcal{R}\mathcal{S}\mathcal{T}\mathcal{U}\mathcal{V}\mathcal{W}\mathcal{X}\mathcal{Y}\mathcal{Z}}$

☞ Blackboard-bold alphabet (`\symbb` or `\mathbb` command):

$\mathbb{ABCDEFGHIJKLMNOPQRSTUVWXYZ}$
$\mathbb{abcdefghijklmnopqrstuvwxyz}\quad\mathbb{0123456789}$

☞ Fraktur alphabet is borrowed from Latin Modern, medium and bold (`\symfrak`, or `\symbffrak` commands):

𝔄𝔅ℭ𝔇𝔈𝔉𝔊ℌℑ𝔍𝔎𝔏𝔐𝔑𝔒𝔓𝔔ℜ𝔖𝔗𝔘𝔙𝔚𝔛𝔜ℨ 𝔞𝔟𝔠𝔡𝔢𝔣𝔤𝔥𝔦𝔧𝔨𝔩𝔪𝔫𝔬𝔭𝔮𝔯𝔰𝔱𝔲𝔳𝔴𝔵𝔶𝔷
𝕬𝕭𝕮𝕯𝕰𝕱𝕲𝕳𝕴𝕵𝕶𝕷𝕸𝕹𝕺𝕻𝕼𝕽𝕾𝕿𝖀𝖁𝖂𝖃𝖄𝖅
𝖆𝖇𝖈𝖉𝖊𝖋𝖌𝖍𝖎𝖏𝖐𝖑𝖒𝖓𝖔𝖕𝖖𝖗𝖘𝖙𝖚𝖛𝖜𝖝𝖞𝖟

but this can overwritten, i.e.

```
\setmathfont{Asana-Math.otf}[range=frak,Scale=MatchUppercase]
$\symfrak{ABCDEFGHIJKL...XYZ abcdefghijkl...xyz}$
```

𝔄𝔅ℭ𝔇𝔈𝔉𝔊ℌℑ𝔍𝔎𝔏𝔐𝔑𝔒𝔓𝔔ℜ𝔖𝔗𝔘𝔙𝔚𝔛𝔜ℨ𝔞𝔟𝔠𝔡𝔢𝔣𝔤𝔥𝔦𝔧𝔨𝔩𝔪𝔫𝔬𝔭𝔮𝔯𝔰𝔱𝔲𝔳𝔴𝔵𝔶𝔷

☞ Sans serif alphabet is borrowed from Latin Modern,

ABCDEFGHIJKLMabcdefghijk *NOPQRSTUVWXYZmnopqrstuvwxyz*

but it can be borrowed from another maths font, i.e.

```
\setmathfont{STIXTwoMath-Regular.otf}[range={sfup,sfit},
                                      Scale=MatchUppercase]
$\symsfup{ABCD...klm}\quad\symsfit{NOPQ...xyz}$
```

ABCDEFGHIJKLMabcdefghijklm *NOPQRSTUVWXYZnopqrstuvwxyz*

☞ Typewriter alphabet is borrowed from Latin Modern,

`ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz`

but it can be borrowed from another maths font, i.e.

```
\setmathfont{STIXTwoMath-Regular.otf}[range=tt,
                                      Scale=MatchUppercase]
$\symtt{ABCDE...XYZ abcde...xyz}$
```

`ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz`

Like Latin Modern, `xcharter-math` provides only four lowercase latin letters in script (or calligraphic) shape: e, g, ℓ, o (`\mscre`, `\mscrg`, `\ell`, `\mscro`).

All others (range `"1D4B6` to `"1D4CF`) have to be borrowed from another maths font if needed, i.e.

```
\setmathfont{LibertinusMath-Regular.otf}%
           [range="1D4B6-"1D4CF, Scale=MatchLowercase]
```

3.7 Bold variant

In case short maths formulas have to be printed in section titles, a *limited* bold variant has been added. Example of usage: **Einstein's equation $E = mc^2$**

```
\setmathfont{XCharter-Math-Bold.otf}[version=bold, options]
\section{\mathversion{bold}Einstein's equation $E=mc^2$}
```

It is also possible to use the `\boldmath` command:

```
\setmathfont{XCharter-Math.otf}[BoldFont=XCharter-Math-Bold.otf]
\section{\boldmath Einstein's equation $E=mc^2$}
```

3.8 Missing symbols

XCharter-Math does not aim at being as complete as `STIXTwoMath-Regular` or `Cambria`, the current glyph coverage compares with TeXGyre maths fonts. In case some symbols do not show up in the output file, you will see warnings in the `.log` file, for instance:

```
Missing character: There is no ⇒ (U+2964) in font XCharterMath
```

Borrowing them from a more complete font, say `Asana-Math`, is a possible workaround:

```
\setmathfont{Asana-Math.otf}[range={"2964},Scale=1.02]
```

scaling is possible, multiple character ranges are separated with commas:

```
\setmathfont{Asana-Math.otf}[range={"294A-"2951,"2964,"2ABB-"2ABE}]
```

Let's mention `albatross`, a useful tool to find out the list of fonts providing a given glyph: f.i. type in a terminal "`albatross U+2964`", see the manpage or `albatross-manual.pdf`.

4 Acknowledgements

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