The `unicodefonttable` package*

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Abstract

A package for typesetting font tables for larger fonts, e.g., TrueType or OpenType Unicode fonts. To produce a one-off table, a standalone version is available as well.

Contents

1 Introduction

When I started to write a new chapter for the third edition of *The LaTeX Companion* on modern fonts available for different LaTeX engines, I was a bit surprised that I couldn't find a way to easily typeset tables showing the glyphs available in TrueType or OpenType fonts. The nfssfont package available with LaTeX only supports fonts from the 8-bit world, but modern fonts that can be used with XeTeX or LuaTeX can contain thousands of glyphs and having a method to display what is available in them was important for me.

I therefore set out to write my own little package and what started as an afternoon exercise ended up being this package, offering plenty of bells and whistles for typesetting such font tables.

As there can be many glyphs in such fonts a tabular representation of them might run for several pages, so the package internally uses the longtable package to handle that.

In most cases the glyphs inside the fonts are indexed by their Unicode numbers so it is natural to display them sorted by their position in the Unicode character set.

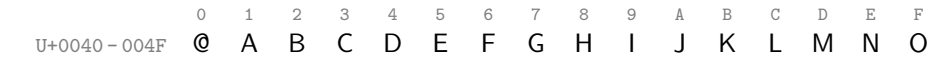
Unicode is organized in named blocks such as "Basic Latin", "Latin-1 Supplement", etc., typically consisting of 265 characters each.[1] It is therefore helpful to use these block names as subtitles within the table, to more easily find the information one is looking for.

A common way to represent the number of a single Unicode character is `U+` followed by four (or more) hexadecimal digits. For example, `U+0041` represents the letter "A" and

* This is version 1.0k of the package, dated 2025/07/11; the license is LPPL.

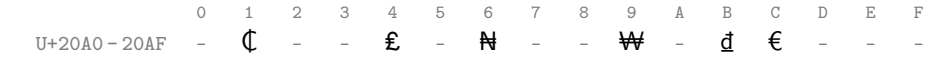
[1] Some blocks are smaller, while those containing the Asian ideographs are much larger.

`U+20AC` the Euro currency symbol "€". We use this convention by showing a Unicode range of sixteen characters at the left of each table row, e.g., `U+0040 - 004F`, followed by the sixteen glyphs in the range. Thus that particular table row from the "Basic Latin" block would show something like

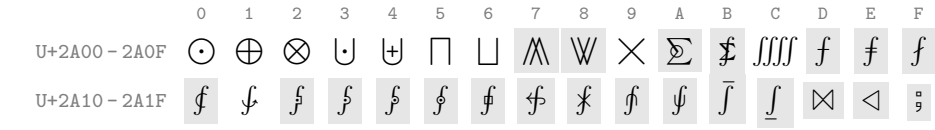


If a Unicode character has no glyph representation in a given font then this is indicated by a special symbol (by default a colored hyphen). By default some color is used, but we've grayscaled the output for *TUGboat*.

In order to easily locate any Unicode character the table shows by default sixteen hex digits as a column heading. For example, to find Euro currency symbol (`U+20AC`) one first finds the right row, which is the range `U+20A0 - 20AF`, and then the `C` column in that row, and the glyph is there (or an indication that the font is missing that glyph; the line shows that for some of the other slots).



It can be useful to compare two fonts with each other by filling the table with glyphs from a secondary font if the primary font is missing them. For example, the next display shows two rows of Latin Modern Math (black glyphs) and instead of showing a missing glyph symbol in most slots, we use the glyphs from New Computer Modern Math, which has a much larger glyph set (normally red glyphs with gray background but again, grayscaled for *TUGboat*).



2 The user interface

The package offers one command to typeset a font table. The appearance of the table can be customized by specifying key/value pairs.

`\displayfonttable` `\displayfonttable * [⟨key/value-list⟩] {⟨font-name⟩} [⟨font-features⟩]`

The ⟨*font-name*⟩ is the font to be displayed. This and the ⟨*font-features*⟩ argument are passed to fontspec, thus they should follow the conventions of that package for specifying a font. The ⟨*key/value-list*⟩ offers customization possibilities discussed below.

The `\displayfonttable*` is a variant of the command, intended for use with 8-bit legacy fonts. It presets some keys, but otherwise behaves identically. The preset values are:

```
nostatistics, display-block=none, hex-digits=head, range-end=FF
```

For details see the next section.

`\fonttablesetup` `\fonttablesetup {⟨key/value-list⟩}`

Instead of or in addition to specifying key/values to `\displayfonttable` it is possible to set them up as defaults. Inside `\displayfonttable` the defaults are applied first, so one can still overwrite their values for an individual table.

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`\fonttableglyphcount` `\fonttableglyphcount`

While typesetting a font table the package keeps track of the number of glyphs it finds in the font. After the table has finished, this value is available in `\fonttableglyphcount` and it is, for example, used when statistics are produced. At the start of the next table it is reset to zero.

2.1 Keys and their values

Several of the available keys are booleans accepting `true` or `false`. They usually exist in pairs so that one can specify the desired behavior without needing to provide a value, e.g., specifying `header` is equivalent to specifying `header=true` or `noheader=false`, etc. In the lists below the default settings are indicated by an underline.

`header`
`noheader`
`title-format`
`title-format-cont`

The first set of keys is concerned with the overall look and feel of the generated table.

`header`, `noheader` These keys determine whether a header to the table is produced.

`title-format`, `title-format-cont` These keys define what is provided as a header title or continuation title if the table consists of several pages. They expect code as their value. This code can contain `#1` and `#2` to denote the ⟨*font-name*⟩ and ⟨*font-features*⟩ arguments, respectively.

By default a title using the `\caption` command is produced; on continuation titles, the ⟨*font-features*⟩ are not shown. This is typeset as a `longtable` header row, so you either need to use `\multicolumn` or a `\caption` command — otherwise everything ends up in the first column.

display-block
hex-digits
hex-digits-font
hex-digits-row-format
color

These keys handle the inner parts of the table.

display-block The Unicode dataset is organized in named blocks that are typically 128 or 256 characters, though some are noticeably larger and a few are smaller. With the **display-block** key it is possible to specify if and how such blocks should be made visible. The following values are supported:

- **titles** Above each display block that contains glyphs the Unicode title of the block is displayed.
- **rules** Display blocks are indicated only by a `\midrule`.
- **none** Display blocks are not indicated at all.

hex-digits To ease reading the table, rows of hex digits are added to it. Where or if this happens is controlled by this key. Allowed values for it are the following:

- **block** A row of hex digits is placed at the beginning of each Unicode block containing glyphs in the displayed font.
- **foot** A row is added to the foot of each table page.
- **head** A row is added to the top of each table page.
- **head+foot** A row is added to the top and the foot of each table page.
- **none** All hex digit rows are suppressed.

hex-digits-font The font to use for the hex digits, by default `\ttfamily\scriptsize`.

hex-digits-row-format This key defines the format for the hex digits shown on the left of each row. It accepts one argument hold the hex values for the row except for the last digit, e.g, `0A3` for the values from `0A30` to `0A3F`. The default formatting is `U+#10\,-\,#1F` and without further adjustments it is automaticaly set in `\ttfamily\footnotesize` and in the color specified by the `color` key. A suitable value that takes up less space would be `U+#1x`.

color This key determines the color for parts of the table (hex digits and Unicode ranges). It can be either `none` or a color specification as understood by the `\color` command. The default is `blue`.

statistics
nostatistics
statistics-font
statistics-format

The next set of keys allows altering the statistics that are produced.

statistics, nostatistics These keys determine whether some statistics are listed at the end of the table.

statistics-font The font used to typeset the statistics; the default is `\normalfont\small`.

statistics-format Code (text) to specify what should be typeset in the statistics. One can use `#1` for the ⟨*font-name*⟩ and `#2` for the glyph count. The material is typeset on a single line at the end of the table. If several lines are needed you need to use `\parbox` or a similar construct.

`glyph-width`
`missing-glyph`
`missing-glyph-font`
`missing-glyph-color`

Another set of keys deals with customization on the glyph level.

`glyph-width` All glyphs are typeset in a box with the same width, the default value is `6pt` which is suitable for most 10pt fonts and make the table fit comfortably into the text width of a typical document.

`missing-glyph` If a slot in a row doesn't have a glyph in the font you may still want display something to indicate this state. By giving the key a value any arbitrary glyph or material can be typeset. The default is to typeset a `-` (hyphen) in a special color.

Rows that contain no glyph whatsoever are not displayed at all. Instead a small vertical space is added to indicate the one or more rows are omitted.

`missing-glyph-font` The font used for the missing glyphs (the default value is `\ttfamily\scriptsize`).

`missing-glyph-color` If not specified it uses the value specified with the `color` key. If you want a different color, e.g., `red`, you can use a color value or you can specify `none` to use no coloring.

`compare-with`
`compare-color`
`compare-bgcolor`
`statistics-compare-format`

You can make comparisons between two fonts, which is useful, for example when dealing with incomplete math fonts and you need to see how well the symbols from one font blend with the supplementary symbols from another font.

`compare-with` If given, the value is a ⟨*comparison-font-name*⟩ that is used to supply missing glyphs. This means that if the ⟨*font-name*⟩ to be displayed is missing a glyph in a slot, then the ⟨*comparison-font-name*⟩ is checked, and if that font has the glyph in question, it will be displayed instead of showing a missing glyph indicator.

`compare-color`, `compare-bgcolor` To distinguish real glyphs from missing but substituted glyphs, they can be colored specially (default `red`) and/or you can have their background colored (default is `black!10`, i.e., a light gray).

`statistics-compare-format` Code (text) to specify what should be typeset in the statistics when comparing two fonts. One can use `#1` for the ⟨*font-name*⟩ and `#2` for its glyph count, `#3` is the name of the comparison font, `#4` its glyph count, `#5` for the number of glyphs missing in this font and `#6` the number of extra glyphs in it. This code is used instead of `statistics-format` when comparisons are made.

The material is typeset on a single line at the end of the table. If several lines are needed you need to use `\parbox` or a similar construct.

range-start
range-end

Finally there are two keys for restricting the display range.

range-start, range-end The full Unicode set of characters is huge and checking every slot to see if the current font contains a glyph in the slot takes a long time. If you know that font contains only a certain subset then you can speed up the table generation considerably by limiting the search (and consequently the output generation). The `range-start` specifies where to start with the search (default `0000`) and `range-end` gives the last slot that is tested (default `FFFF`).

Thus, by default we restrict the display to slots below `10000`, because text fonts seldom contain glyphs in the higher planes. But if you want to see everything of the font (as far as supported by this package) and are prepared to wait for the higher planes to be scanned, you can go up to a value of `FFFFF`.

However, please note that the LuaTEX fontloader uses the "Supplementary Private Use Area-A", which starts at `F0000`, as its own playground and places remapping into it, so by default you see random data instead of font data there. You either have to use the XETEX engine or load the font with `Renderer=HarfBuzz` in LuaTEX.

These keys are also quite useful in combination with the previous `compare-with` key, to display only, for example, the Greek letters and see how glyphs from two fonts blend with each other.

2.2 A standalone interactive version

If you want to quickly display a single font, you can run `unicodefont.tex` through LATEX using LuaTEX (or XETEX) as the engine. Similar to `nfssfont.tex` (which is for 8-bit fonts with pdfTEX) it asks you a few questions and then generates the font table for you. There are fewer configuration options available, but this workflow saves you writing a document to get a one-off table.

Most font tables need several runs due to the use of longtable, which has to find the right width for the columns across several pages. The `unicodefont` file therefore remembers your selection from the previous run and asks you if you want to reapply it to speed up the process.

3 Notes on the table data

If you look at some parts of a Unicode font table you see a number of slots that do not show a "missing glyph" sign, but nonetheless appear to be empty. For example:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+0020 – 002F		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
U+0030 – 003F	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
U+0040 – 004F	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
U+0050 – 005F	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
U+0060 – 006F	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
U+0070 – 007F	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	-
U+00A0 – 00AF		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	¯
U+00B0 – 00BF	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿

The reason is that Unicode contains a lot of special spaces or otherwise invisible characters, e.g., `U+0020` is the normal space, `U+00A0` is a non-breaking space, `U+00AD` is a soft-hyphen (what LATEX users would indicate with `\-`), and so forth. Especially the row `U+2000-200F` in Table 6 looks strange as it appears to be totally empty, but in fact most of its slots contain spaces of different width.

General Punctuation

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+2000 - 200F															-	-
U+2010 - 201F	-	-	‒	–	—	―	‖	=	‘	’	,	-	“	”	„	-
U+2020 - 202F	†	‡	•	-	-	-	…	-	-	-	-	-	-	-	-	

Another somewhat surprising area is the "Mathematical Alphanumeric Symbols" block in math fonts, starting at `U+1D400`. There you see a number of missing characters, the first two being `U+1D455` (math italic small h) and `U+1D49D` (math script B).

Mathematical Alphanumeric Symbols

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+1D400 - 1D40F	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
U+1D410 - 1D41F	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**a**	**b**	**c**	**d**	**e**	**f**
U+1D420 - 1D42F	**g**	**h**	**i**	**j**	**k**	**l**	**m**	**n**	**o**	**p**	**q**	**r**	**s**	**t**	**u**	**v**
U+1D430 - 1D43F	**w**	**x**	**y**	**z**	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*	*L*
U+1D440 - 1D44F	*M*	*N*	*O*	*P*	*Q*	*R*	*S*	*T*	*U*	*V*	*W*	*X*	*Y*	*Z*	*a*	*b*
U+1D450 - 1D45F	*c*	*d*	*e*	*f*	*g*	-	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*	*q*	*r*
U+1D460 - 1D46F	*s*	*t*	*u*	*v*	*w*	*x*	*y*	*z*	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***
U+1D470 - 1D47F	***I***	***J***	***K***	***L***	***M***	***N***	***O***	***P***	***Q***	***R***	***S***	***T***	***U***	***V***	***W***	***X***
U+1D480 - 1D48F	***Y***	***Z***	***a***	***b***	***c***	***d***	***e***	***f***	***g***	***h***	***i***	***j***	***k***	***l***	***m***	***n***
U+1D490 - 1D49F	***o***	***p***	***q***	***r***	***s***	***t***	***u***	***v***	***w***	***x***	***y***	***z***	$\mathcal{A}$	-	$\mathcal{C}$	$\mathcal{D}$
U+1D4A0 - 1D4AF	-	-	$\mathcal{G}$	-	-	$\mathcal{J}$	$\mathcal{K}$	-	-	$\mathcal{N}$	$\mathcal{O}$	$\mathcal{P}$	$\mathcal{Q}$	-	$\mathcal{S}$	$\mathcal{T}$

In this case the reason is *not* that the font fails to implement the characters, but that these characters have already been defined in earlier revisions of the Unicode standard in the lower Unicode plane. For example, the "h" is the Planck constant `U+210E` and `U+212C` is the script capital B, etc. The Unicode Consortium decided not to encode the *same* character twice, hence the apparent holes.

A Index

Numbers written in italic refer to the page where the corresponding entry is described or mentioned.

B Examples

In this section we show the results of a few calls to `\displayfonttable`. The tables are a bit easier to navigate if they use color in some places, but for *TUGboat* this is not practical, so we use black and gray.

Please note that this documentation was produced with LuaTEX. If you reuse the examples with XeTEX, you may have to specify the font names differently (i.e., following to the fontspec documentation for this engine).

B.1 Computer Modern Sans — 7-bit font

Our first example is the original Computer Modern Sans, with character codes ≤ 127. Command used:

```
\displayfonttable*[color=none, range-end=7F]{cmss10}
```

Table 7: cmss10

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+0000 - 000F	Γ	Δ	Θ	Λ	Ξ	Π	Σ	Υ	Φ	Ψ	Ω	ff	fi	fl	ffi	ffl
U+0010 - 001F	ı	ȷ	`	´	˘	˘	¯	˚	¸	ß	æ	œ	ø	Æ	Œ	Ø
U+0020 - 002F	˝	!	”	#	$	%	&	’	(	)	*	+	,	-	.	/
U+0030 - 003F	0	1	2	3	4	5	6	7	8	9	:	;	¡	=	¿	?
U+0040 - 004F	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
U+0050 - 005F	P	Q	R	S	T	U	V	W	X	Y	Z	[	“	]	^	·
U+0060 - 006F	‘	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
U+0070 - 007F	p	q	r	s	t	u	v	w	x	y	z	–	—	˝	~	¨

B.2 TEX Gyre Heros — 8-bit font

This example shows the TEX Gyre Heros 8-bit font, in the T1 encoding, with character codes ≤ 255. We used `hex-digits-row-format` to shorten the row titles on the left:

```
\displayfonttable*[color=none,hex-digits-row-format=U+#1]{ec-qhvr}
```

Table 8: ec-qhvr

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+000	`	´	^	~	¨	˝	˚	ˇ	˘	-	·	¸	˛	,	‹	›
U+001	“	”	„	«	»	–	—		˚	ı	ȷ	ff	fi	fl	ffi	ffl
U+002	␣	!	"	#	$	%	&	’	(	)	*	+	,	-	.	/
U+003	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
U+004	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
U+005	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_

Table 8: ec-qhvr *cont.*

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+006	‘	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
U+007	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	-
U+008	Ă	Ą	Ć	Č	Ď	Ě	Ę	Ğ	Ĺ	Ľ	Ł	Ń	Ň	Ŋ	Ő	Ŕ
U+009	Ř	Ś	Š	Ş	Ť	Ţ	Ű	Ů	Ÿ	Ź	Ž	Ż	IJ	İ	đ	§
U+00A	ă	ą	ć	č	ď	ě	ę	ğ	Í	ľ	ł	ń	ň	ŋ	ő	ŕ
U+00B	ř	ś	š	ş	ť	ţ	ű	ů	ÿ	ź	ž	ż	ij	¡	¿	£
U+00C	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
U+00D	Đ	Ñ	Ò	Ó	Ô	Õ	Ö	Œ	Ø	Ù	Ú	Û	Ü	Ý	Þ	SS
U+00E	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
U+00F	ð	ñ	ò	ó	ô	õ	ö	œ	ø	ù	ú	û	ü	ý	þ	ß

B.3 Latin Modern Math — 8-bit fonts

The traditional Latin Modern Math Italic, Symbol and Extension fonts. The symbol font (`lmsy10`) has two characters added to the Computer Modern symbol repertoire, seen in the last row of the table. Commands used:

```
\displayfonttable*[color=none]{lmmi10}
\displayfonttable*[color=none]{lmsy10}
\displayfonttable*[color=none]{lmex10}
```

Table 9: lmmi10

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+0000 - 000F	Γ	Δ	Θ	Λ	Ξ	Π	Σ	Υ	Φ	Ψ	Ω	α	β	γ	δ	ϵ
U+0010 - 001F	ζ	η	θ	ι	κ	λ	μ	ν	ξ	π	ρ	σ	τ	υ	ϕ	χ
U+0020 - 002F	ψ	ω	ε	ϑ	ϖ	ϱ	ς	φ	$\leftharpoonup$	$\leftharpoondown$	$\rightharpoonup$	$\rightharpoondown$	$\smile$	$\frown$	$\triangleright$	$\triangleleft$
U+0030 - 003F	0	1	2	3	4	5	6	7	8	9	.	,	<	/	>	$\star$
U+0040 - 004F	∂	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
U+0050 - 005F	P	Q	R	S	T	U	V	W	X	Y	Z	$\flat$	$\natural$	$\sharp$	$\smile$	$\frown$
U+0060 - 006F	ℓ	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
U+0070 - 007F	p	q	r	s	t	u	v	w	x	y	z	$\imath$	$\jmath$	$\wp$	$\vec{}$	$\frown$

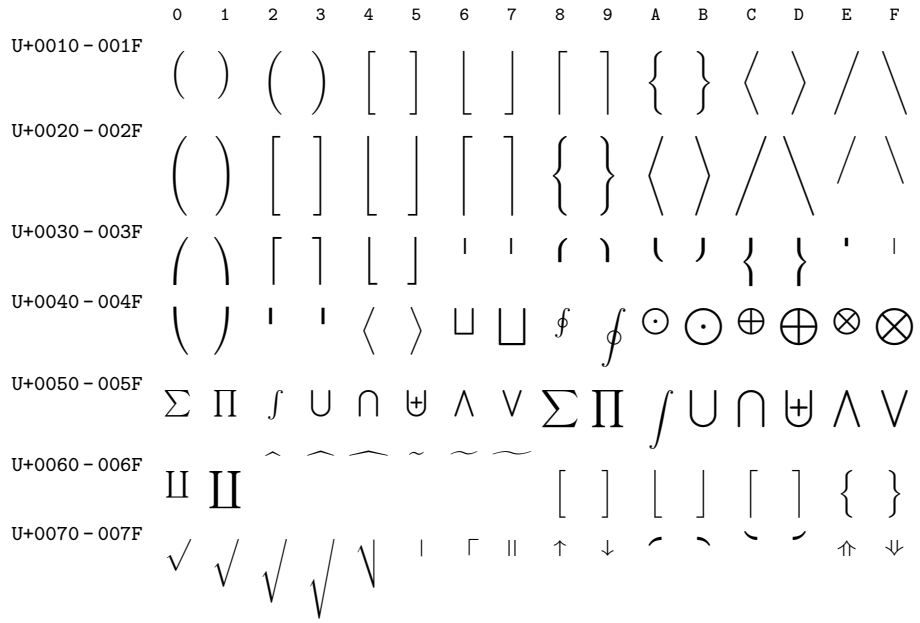
Table 10: lmsy10

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+0000 - 000F	−	·	×	∗	÷	◇	±	∓	⊕	⊖	⊗	⊘	⊙	◯	∘	•
U+0010 - 001F	≍	≡	⊆	⊇	≤	≥	⪯	⪰	∼	≈	⊂	⊃	≪	≫	≺	≻
U+0020 - 002F	←	→	↑	↓	↔	↗	↘	≃	⇐	⇒	⇑	⇓	⇔	↖	↙	∝
U+0030 - 003F	′	∞	∈	∋	△	▽	/	‑	∀	∃	¬	∅	ℜ	ℑ	⊤	⊥
U+0040 - 004F	ℵ	$\mathcal{A}$	$\mathcal{B}$	$\mathcal{C}$	$\mathcal{D}$	$\mathcal{E}$	$\mathcal{F}$	$\mathcal{G}$	$\mathcal{H}$	$\mathcal{I}$	$\mathcal{J}$	$\mathcal{K}$	$\mathcal{L}$	$\mathcal{M}$	$\mathcal{N}$	$\mathcal{O}$
U+0050 - 005F	$\mathcal{P}$	$\mathcal{Q}$	$\mathcal{R}$	$\mathcal{S}$	$\mathcal{T}$	$\mathcal{U}$	$\mathcal{V}$	$\mathcal{W}$	$\mathcal{X}$	$\mathcal{Y}$	$\mathcal{Z}$	∪	∩	⊎	∧	∨
U+0060 - 006F	⊢	⊣	⌊	⌋	⌈	⌉	{	}	⟨	⟩	|	‖	↕	⇕	\	≀
U+0070 - 007F	√	∐	∇	∫	⊔	⊓	⊑	⊒	§	†	‡	¶	♣	♢	♡	♠
U+00A0 - 00AF	-	-	-	-	-	-	-	-	-	-	-	-	⩽	⩾	-	-

Table 11: lmex10

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+0000 - 000F	(	)	[	]	⌊	⌋	⌈	⌉	{	}	⟨	⟩	|	‖	/	\

Table 11: lmex10 *cont.*



B.4 Latin Modern Math compared to New Computer Modern Math

This example shows the extra symbols available in New Computer Modern Math in comparison to Latin Modern Math as the base font. We use the following setup (including settings for the grayscaled *TUGboat* output, as an example of color overrides):

```
\displayfonttable[hex-digits=head+foot, range-end=1FFFF,
                  compare-with=New Computer Modern Math,
                  title-format=\caption{Latin Modern Math compared to
                                        New Computer Modern Math},
                  title-format-cont=\caption{LM Math vs.\ NewCM Math,
                                        \emph{cont.}},
                  compare-color=black,  compare-bgcolor=black!5,
                  missing-glyph-color=black!50, color=black!75]
                 {Latin Modern Math}
```

That is, glyphs only in `NewCM` are shown with a light gray background.

We also extended the range to cover `U+10000` to `U+1FFFF` in order to include the Unicode Math alphabets.

Table 12: Latin Modern Math compared to New Computer Modern Math

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Basic Latin																
U+0020 - 002F		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
U+0030 - 003F	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
U+0040 - 004F	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
U+0050 - 005F	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
U+0060 - 006F	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
U+0070 - 007F	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	DEL
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Table 12: LM Math vs. NewCM Math, *cont.*

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Latin-1 Supplement																
U+00A0 – 00AF		¡	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	SHY	®	¯
U+00B0 – 00BF	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
U+00C0 – 00CF	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
U+00D0 – 00DF	Đ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
U+00E0 – 00EF	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
U+00F0 – 00FF	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ
Latin Extended-A																
U+0100 – 010F	Ā	ā	Ă	ă	Ą	ą	Ć	ć	Ĉ	ĉ	Ċ	ċ	Č	č	Ď	ď
U+0110 – 011F	Đ	đ	Ē	ē	Ĕ	ĕ	Ė	ė	Ę	ę	Ě	ě	Ĝ	ĝ	Ğ	ğ
U+0120 – 012F	Ġ	ġ	Ģ	ģ	Ĥ	ĥ	Ħ	ħ	Ĩ	ĩ	Ī	ī	Ĭ	ĭ	Į	į
U+0130 – 013F	İ	ı	IJ	ij	Ĵ	ĵ	Ķ	ķ	ĸ	Ĺ	Í	Ļ	ļ	Ľ	ľ	Ŀ
U+0140 – 014F	ŀ	Ł	ł	Ń	ń	Ņ	ņ	Ň	ň	ŉ	Ŋ	ŋ	Ō	ō	Ŏ	ŏ
U+0150 – 015F	Ő	ő	Œ	œ	Ŕ	ŕ	Ŗ	ŗ	Ř	ř	Ś	ś	Ŝ	ŝ	Ş	ş
U+0160 – 016F	Š	š	Ţ	ţ	Ť	ť	Ŧ	ŧ	Ũ	ũ	Ū	ū	Ŭ	ŭ	Ů	ů
U+0170 – 017F	Ű	ű	Ų	ų	Ŵ	ŵ	Ŷ	ŷ	Ÿ	Ź	ź	Ż	ż	Ž	ž	ſ
Latin Extended-B																
U+0180 – 018F	ƀ	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
U+01A0 – 01AF	Ơ	ơ	–	–	–	–	–	–	–	–	–	–	–	–	–	Ư
U+01B0 – 01BF	ư	–	–	–	–	Ƶ	–	–	–	–	–	–	–	–	–	–
U+0210 – 021F	–	–	–	–	–	–	–	–	Ș	ș	Ț	ț	–	–	–	–
U+0230 – 023F	–	–	–	–	–	–	–	ȷ	–	–	–	–	–	–	–	–
Spacing Modifier Letters																
U+02C0 – 02CF	–	–	–	–	–	–	ˆ	ˇ	–	–	–	–	–	–	–	–
U+02D0 – 02DF	–	–	–	–	–	–	–	–	˘	˙	˚	˛	˜	˝	–	–
Combining Diacritical Marks																
U+0300 – 030F	̀	́	̂	̃	̄	̅	̆	̇	̈	̉	̊	̋	̌	–	–	̎
U+0310 – 031F	̑	̒	̓	–	–	̕	–	–	–	–	̬	–	–	–	–	–
U+0320 – 032F	–	–	–	̣	–	–	̧	–	–	–	–	–	̮	̯	̰	̱
U+0330 – 033F	̴	–	–	̵	–	–	–	–	̸	–	–	–	–	–	–	–
U+0340 – 034F	–	–	–	–	–	–	–	–	–	–	–	–	–	↔	–	–
Greek and Coptic																
U+0390 – 039F	–	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
U+03A0 – 03AF	Π	Ρ	–	Σ	Τ	ϒ	Φ	Χ	Ψ	Ω	–	–	–	–	–	–
U+03B0 – 03BF	–	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
U+03C0 – 03CF	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	–	–	–	–	–	–
U+03D0 – 03DF	–	ϑ	–	–	–	ϕ	ϖ	–	–	–	–	–	Ϝ	ϝ	–	–
U+03F0 – 03FF	ϰ	ϱ	–	–	ϴ	ϵ	϶	–	–	–	–	–	–	–	–	–
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Table 12: LM Math vs. NewCM Math, *cont.*

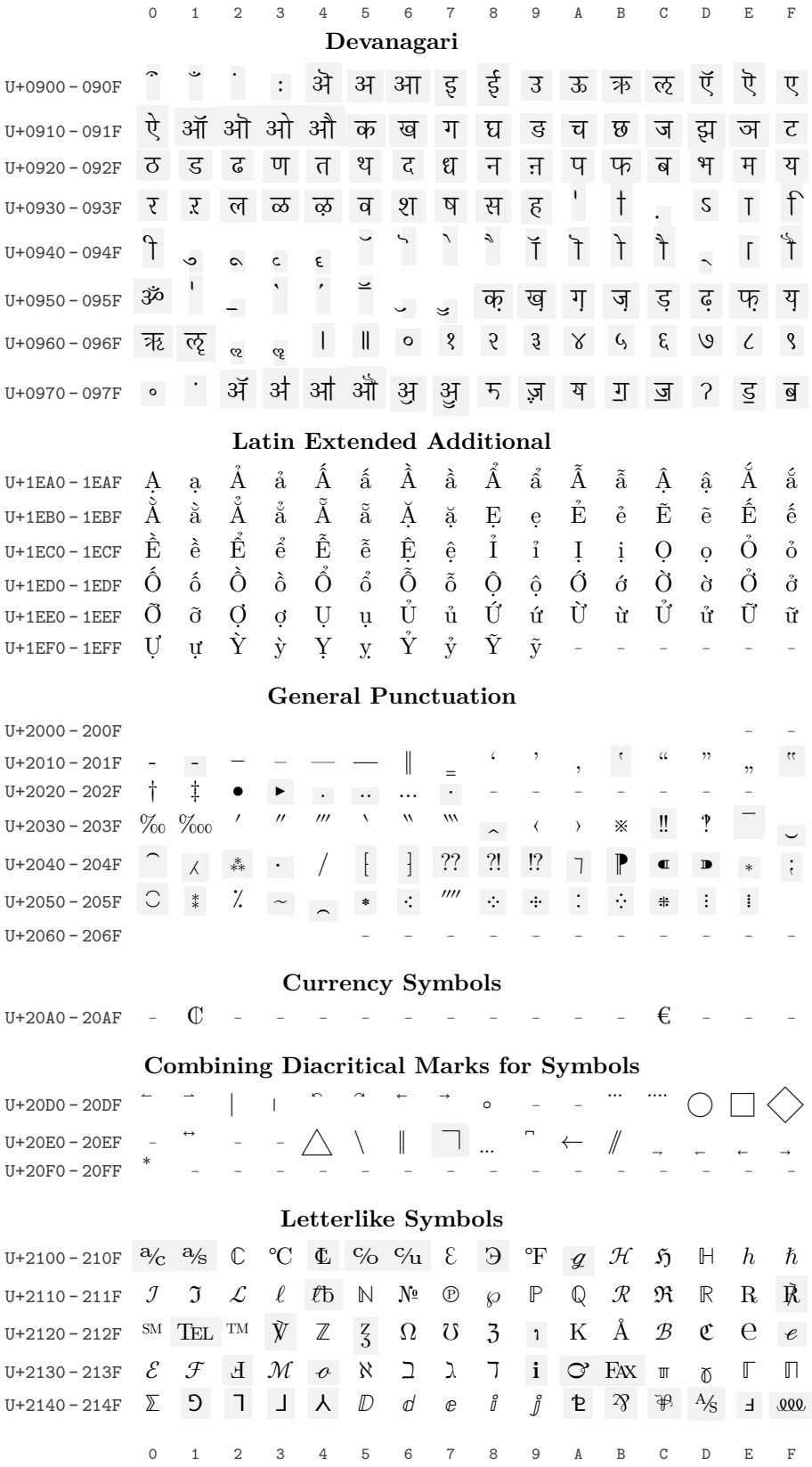


Table 12: LM Math vs. NewCM Math, *cont.*

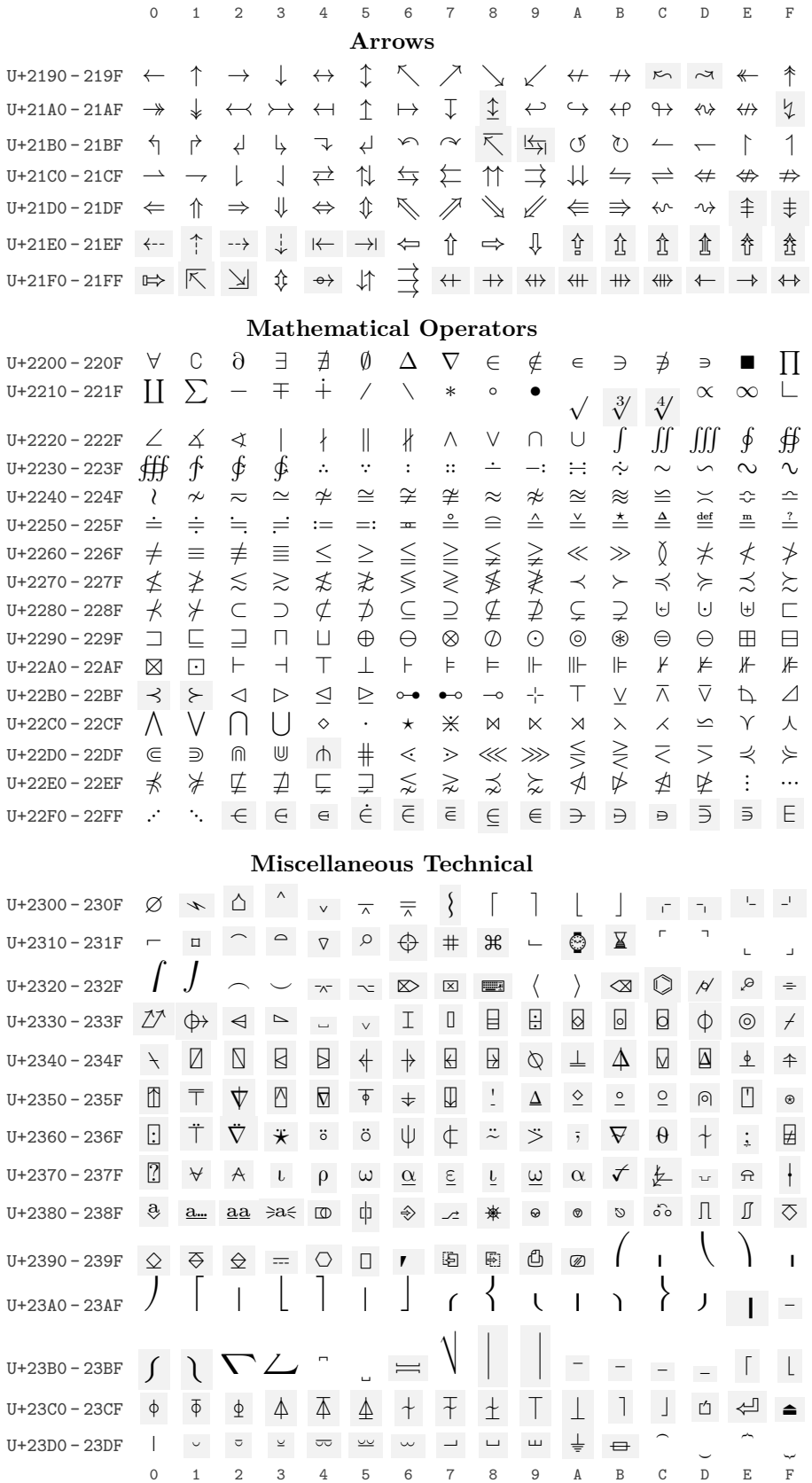


Table 12: LM Math vs. NewCM Math, *cont.*

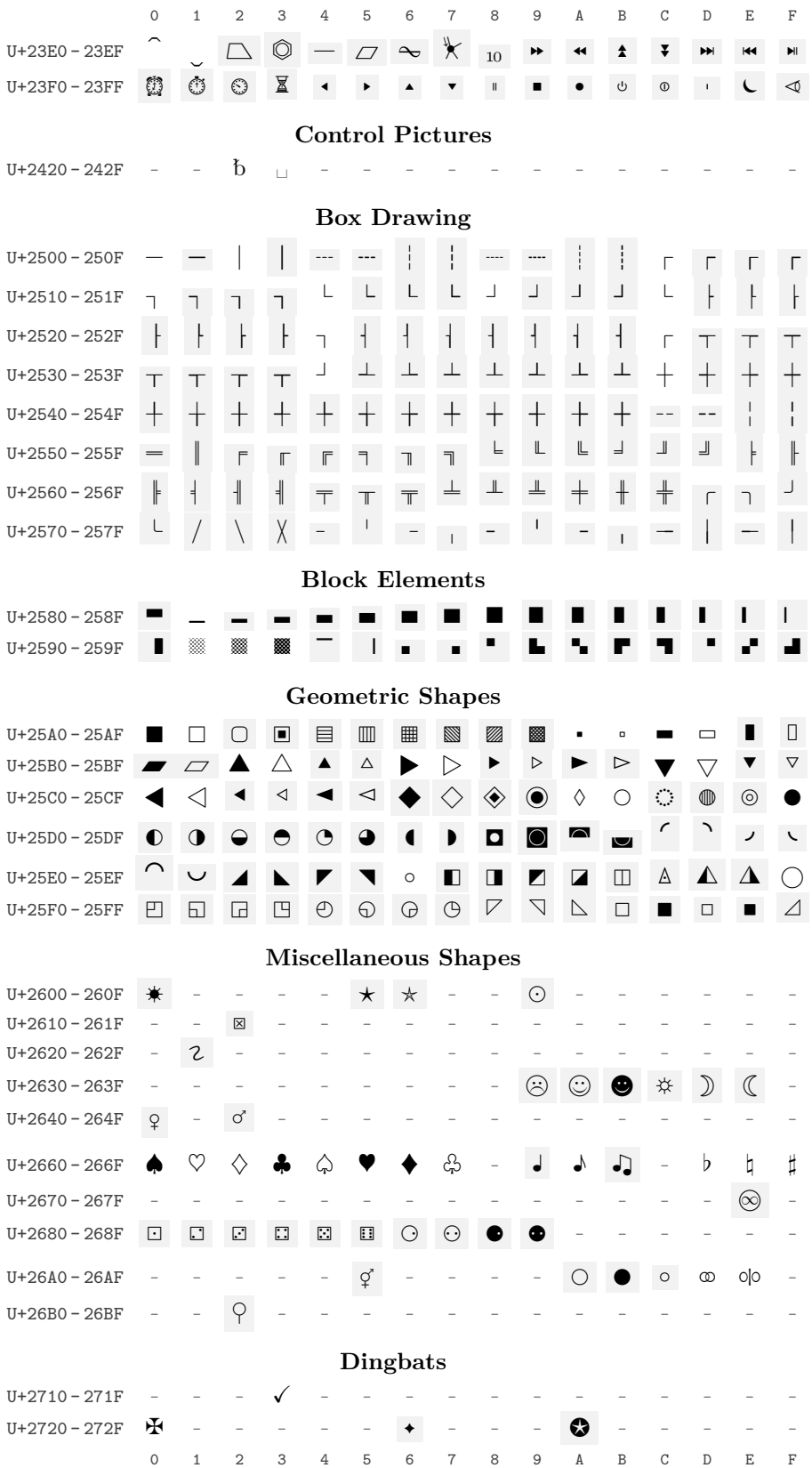
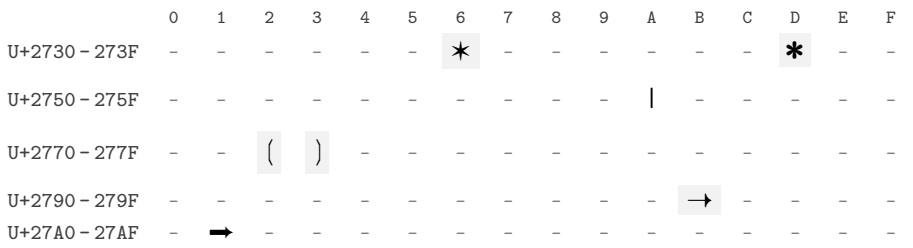
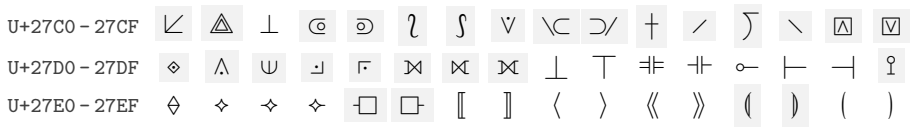


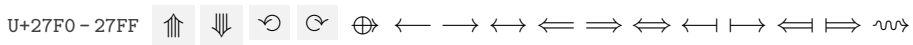
Table 12: LM Math vs. NewCM Math, *cont.*



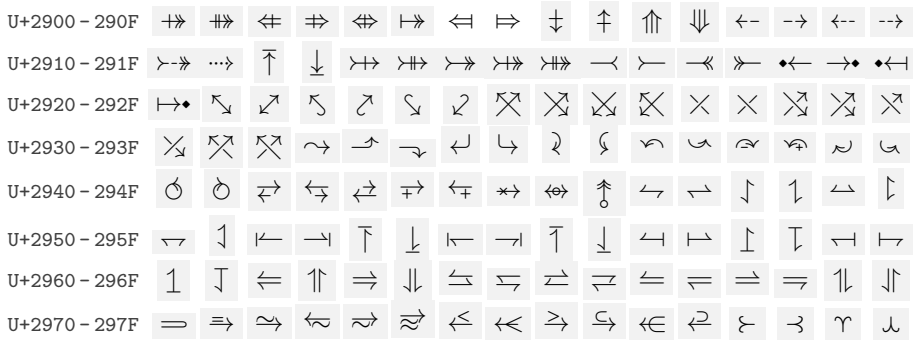
Miscellaneous Mathematical Symbols-A



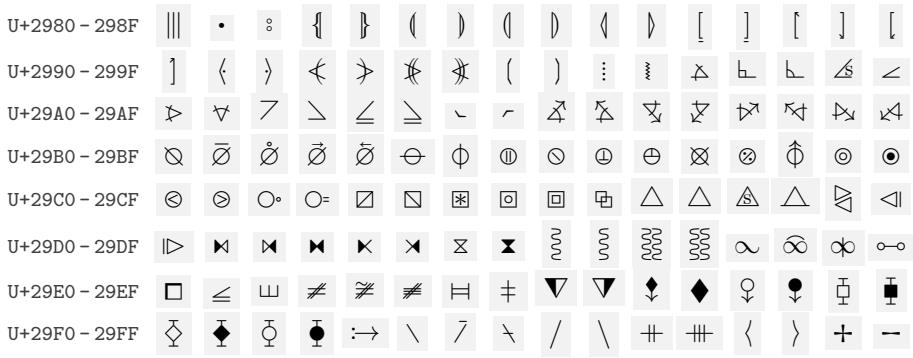
Supplemental Arrows-A



Supplemental Arrows-B



Miscellaneous Mathematical Symbols-B



Supplemental Mathematical Operators

Table 12: LM Math vs. NewCM Math, *cont.*

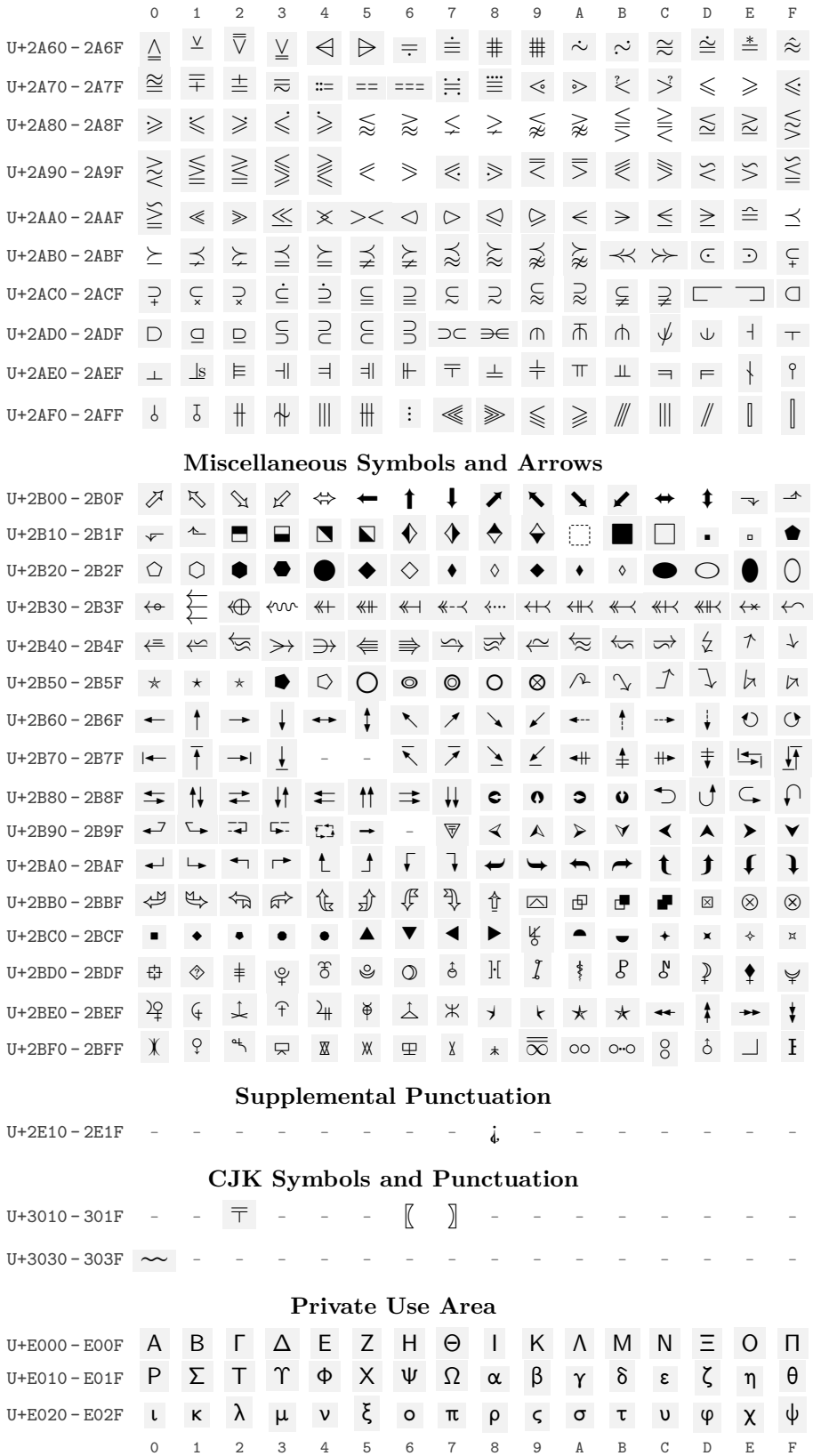


Table 12: LM Math vs. NewCM Math, *cont.*

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+E030 – E03F	ω	ϵ	∌	∉	↬	↞	∗	∗	∗	∗	↱	↘	↘	↗	–	–
U+E040 – E04F	–	*A*	*B*	*Γ*	*Δ*	*E*	*Z*	*H*	*Θ*	*I*	*K*	*Λ*	*M*	*N*	*Ξ*	*O*
U+E050 – E05F	*Π*	*P*	*Σ*	*T*	*Υ*	*Φ*	*X*	*Ψ*	*Ω*	*α*	*β*	*γ*	*δ*	*ε*	*ζ*	*η*
U+E060 – E06F	*θ*	*ι*	*κ*	*λ*	*μ*	*ν*	*ξ*	*o*	*π*	*ρ*	*ς*	*σ*	*τ*	*υ*	*φ*	*χ*
U+E070 – E07F	*ψ*	*ω*	*ϵ*	–	–	–	–	–	–	–	–	–	–	–	–	–
U+E370 – E37F	–	–	–	–	–	–	∮	∯	–	–	–	–	–	–	–	–
U+E390 – E39F	–	–	–	–	–	∱	–	∱	∱	∱	∱	∱	–	–	–	–
U+E3D0 – E3DF	–	–	–	∫	–	–	–	–	–	–	–	–	–	–	–	–
U+EA50 – EA5F	–	–	–	–	–	–	–	∯	–	–	–	–	–	–	–	–

Alphabetic Presentation Forms

U+FB00 – FB0F	ff	fi	fl	ffi	ffl	–	–	–	–	–	–	–	–	–	–	–

Variation Selectors

U+FE00 – FE0F			–	–	–	–	–	–	–	–	–	–	–	–	–	–

Arabic Presentation Forms-B

U+FEF0 – FEFF	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	

Mathematical Alphanumeric Symbols

U+1D400 – 1D40F	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
U+1D410 – 1D41F	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**a**	**b**	**c**	**d**	**e**	**f**
U+1D420 – 1D42F	**g**	**h**	**i**	**j**	**k**	**l**	**m**	**n**	**o**	**p**	**q**	**r**	**s**	**t**	**u**	**v**
U+1D430 – 1D43F	**w**	**x**	**y**	**z**	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*	*L*
U+1D440 – 1D44F	*M*	*N*	*O*	*P*	*Q*	*R*	*S*	*T*	*U*	*V*	*W*	*X*	*Y*	*Z*	*a*	*b*
U+1D450 – 1D45F	*c*	*d*	*e*	*f*	*g*	–	*i*	*j*	*k*	*l*	*m*	*n*	*o*	*p*	*q*	*r*
U+1D460 – 1D46F	*s*	*t*	*u*	*v*	*w*	*x*	*y*	*z*	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***
U+1D470 – 1D47F	***I***	***J***	***K***	***L***	***M***	***N***	***O***	***P***	***Q***	***R***	***S***	***T***	***U***	***V***	***W***	***X***
U+1D480 – 1D48F	***Y***	***Z***	***a***	***b***	***c***	***d***	***e***	***f***	***g***	***h***	***i***	***j***	***k***	***l***	***m***	***n***
U+1D490 – 1D49F	***o***	***p***	***q***	***r***	***s***	***t***	***u***	***v***	***w***	***x***	***y***	***z***	*𝒜*	–	*𝒞*	*𝒟*
U+1D4A0 – 1D4AF	–	–	*𝒢*	–	–	*𝒥*	*𝒦*	–	–	*𝒩*	*𝒪*	*𝒫*	*𝒬*	–	*𝒮*	*𝒯*
U+1D4B0 – 1D4BF	*𝒰*	*𝒱*	*𝒲*	*𝒳*	*𝒴*	*𝒵*	*𝒶*	*𝒷*	*𝒸*	*𝒹*	–	*𝒻*	–	*𝒽*	*𝒾*	*𝒿*
U+1D4C0 – 1D4CF	*𝓀*	*𝓁*	*𝓂*	*𝓃*	–	*𝓅*	*𝓆*	*𝓇*	*𝓈*	*𝓉*	*𝓊*	*𝓋*	*𝓌*	*𝓍*	*𝓎*	*𝓏*
U+1D4D0 – 1D4DF	***𝒜***	***ℬ***	***𝒞***	***𝒟***	***ℰ***	***ℱ***	***𝒢***	***ℋ***	***ℐ***	***𝒥***	***𝒦***	***ℒ***	***ℳ***	***𝒩***	***𝒪***	***𝒫***
U+1D4E0 – 1D4EF	***𝒬***	***ℛ***	***𝒮***	***𝒯***	***𝒰***	***𝒱***	***𝒲***	***𝒳***	***𝒴***	***𝒵***	***𝒶***	***𝒷***	***𝒸***	***𝒹***	***ℯ***	***𝒻***
U+1D4F0 – 1D4FF	***𝑔***	***𝒽***	***𝒾***	***𝒿***	***𝓀***	***𝓁***	***𝓂***	***𝓃***	***𝑜***	***𝓅***	***𝓆***	***𝓇***	***𝓈***	***𝓉***	***𝓊***	***𝓋***
U+1D500 – 1D50F	***𝓌***	***𝓍***	***𝓎***	***𝓏***	𝔄	𝔅	–	𝔇	𝔈	𝔉	𝔊	–	–	𝔍	𝔎	𝔏
U+1D510 – 1D51F	𝔐	𝔑	𝔒	𝔓	𝔔	–	𝔖	𝔗	𝔘	𝔙	𝔚	𝔛	𝔜	–	𝔞	𝔟
U+1D520 – 1D52F	𝔠	𝔡	𝔢	𝔣	𝔤	𝔥	𝔦	𝔧	𝔨	𝔩	𝔪	𝔫	𝔬	𝔭	𝔮	𝔯
U+1D530 – 1D53F	𝔰	𝔱	𝔲	𝔳	𝔴	𝔵	𝔶	𝔷	𝔸	𝔹	–	𝔻	𝔼	𝔽	𝔾	–
U+1D540 – 1D54F	𝕀	𝕁	𝕂	𝕃	𝕄	–	𝕆	–	–	–	𝕊	𝕋	𝕌	𝕍	𝕎	𝕏
U+1D550 – 1D55F	𝕐	–	𝕒	𝕓	𝕔	𝕕	𝕖	𝕗	𝕘	𝕙	𝕚	𝕛	𝕜	𝕝	𝕞	𝕟
U+1D560 – 1D56F	𝕠	𝕡	𝕢	𝕣	𝕤	𝕥	𝕦	𝕧	𝕨	𝕩	𝕪	𝕫	**𝔄**	**𝔅**	**𝔆**	**𝔇**
U+1D570 – 1D57F	**𝔈**	**𝔉**	**𝔊**	**𝔋**	**𝔌**	**𝔍**	**𝔎**	**𝔏**	**𝔐**	**𝔑**	**𝔒**	**𝔓**	**𝔔**	**𝔕**	**𝔖**	**𝔗**
U+1D580 – 1D58F	**𝔘**	**𝔙**	**𝔚**	**𝔛**	**𝔜**	**𝔝**	**𝔞**	**𝔟**	**𝔠**	**𝔡**	**𝔢**	**𝔣**	**𝔤**	**𝔥**	**𝔦**	**𝔧**
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

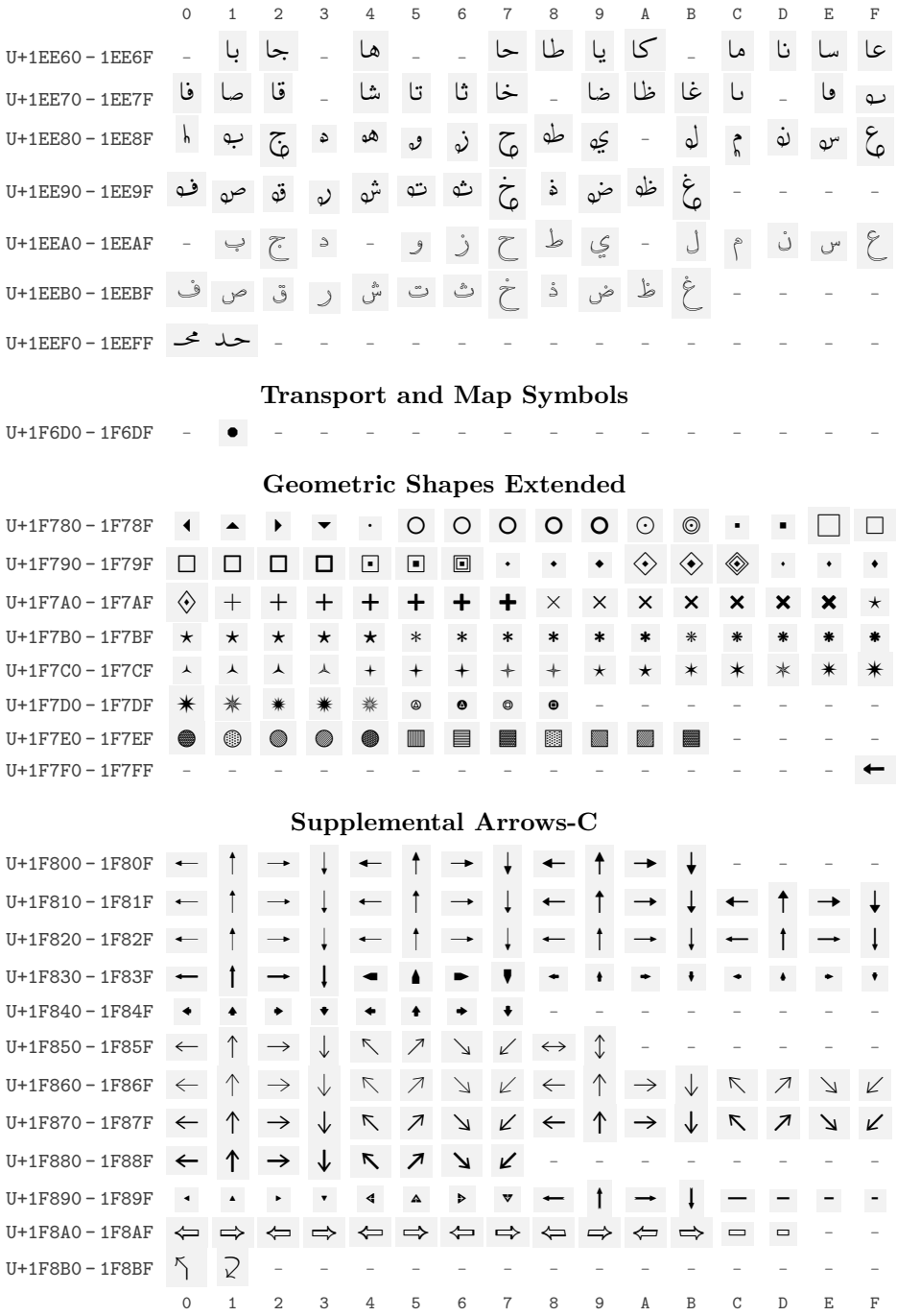
Table 12: LM Math vs. NewCM Math, *cont.*

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+1D590 – 1D59F	𝖐	𝖑	𝖒	𝖓	𝖔	𝖕	𝖖	𝖗	𝖘	𝖙	𝖚	𝖛	𝖜	𝖝	𝖞	𝖟
U+1D5A0 – 1D5AF	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
U+1D5B0 – 1D5BF	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f
U+1D5C0 – 1D5CF	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v
U+1D5D0 – 1D5DF	w	x	y	z	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
U+1D5E0 – 1D5EF	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	**a**	**b**
U+1D5F0 – 1D5FF	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**	**l**	**m**	**n**	**o**	**p**	**q**	**r**
U+1D600 – 1D60F	**s**	**t**	**u**	**v**	**w**	**x**	**y**	**z**	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
U+1D610 – 1D61F	*I*	*J*	*K*	*L*	*M*	*N*	*O*	*P*	*Q*	*R*	*S*	*T*	*U*	*V*	*W*	*X*
U+1D620 – 1D62F	*Y*	*Z*	*a*	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*l*	*m*	*n*
U+1D630 – 1D63F	*o*	*p*	*q*	*r*	*s*	*t*	*u*	*v*	*w*	*x*	*y*	*z*	***A***	***B***	***C***	***D***
U+1D640 – 1D64F	***E***	***F***	***G***	***H***	***I***	***J***	***K***	***L***	***M***	***N***	***O***	***P***	***Q***	***R***	***S***	***T***
U+1D650 – 1D65F	***U***	***V***	***W***	***X***	***Y***	***Z***	***a***	***b***	***c***	***d***	***e***	***f***	***g***	***h***	***i***	***j***
U+1D660 – 1D66F	***k***	***l***	***m***	***n***	***o***	***p***	***q***	***r***	***s***	***t***	***u***	***v***	***w***	***x***	***y***	***z***
U+1D670 – 1D67F	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
U+1D680 – 1D68F	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f
U+1D690 – 1D69F	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v
U+1D6A0 – 1D6AF	w	x	y	z	𝚤	𝚥	–	–	**Α**	**Β**	**Γ**	**Δ**	**Ε**	**Ζ**	**Η**	**Θ**
U+1D6B0 – 1D6BF	**Ι**	**Κ**	**Λ**	**Μ**	**Ν**	**Ξ**	**Ο**	**Π**	**Ρ**	**ϴ**	**Σ**	**Τ**	**ϒ**	**Φ**	**Χ**	**Ψ**
U+1D6C0 – 1D6CF	**Ω**	**∇**	**α**	**β**	**γ**	**δ**	**ε**	**ζ**	**η**	**θ**	**ι**	**κ**	**λ**	**μ**	**ν**	**ξ**
U+1D6D0 – 1D6DF	**ο**	**π**	**ρ**	**ς**	**σ**	**τ**	**υ**	**φ**	**χ**	**ψ**	**ω**	**∂**	**ϵ**	**ϑ**	**ϰ**	**ϕ**
U+1D6E0 – 1D6EF	**ϱ**	**ϖ**	*Α*	*Β*	*Γ*	*Δ*	*Ε*	*Ζ*	*Η*	*Θ*	*Ι*	*Κ*	*Λ*	*Μ*	*Ν*	*Ξ*
U+1D6F0 – 1D6FF	*Ο*	*Π*	*Ρ*	*ϴ*	*Σ*	*Τ*	*ϒ*	*Φ*	*Χ*	*Ψ*	*Ω*	*∇*	*α*	*β*	*γ*	*δ*
U+1D700 – 1D70F	*ε*	*ζ*	*η*	*θ*	*ι*	*κ*	*λ*	*μ*	*ν*	*ξ*	*ο*	*π*	*ρ*	*ς*	*σ*	*τ*
U+1D710 – 1D71F	*υ*	*φ*	*χ*	*ψ*	*ω*	*∂*	*ϵ*	*ϑ*	*ϰ*	*ϕ*	*ϱ*	*ϖ*	***Α***	***Β***	***Γ***	***Δ***
U+1D720 – 1D72F	***Ε***	***Ζ***	***Η***	***ϴ***	***Ι***	***Κ***	***Λ***	***Μ***	***Ν***	***Ξ***	***Ο***	***Π***	***Ρ***	***ϴ***	***Σ***	***Τ***
U+1D730 – 1D73F	***ϒ***	***Φ***	***Χ***	***Ψ***	***Ω***	***∇***	***α***	***β***	***γ***	***δ***	***ε***	***ζ***	***η***	***θ***	***ι***	***κ***
U+1D740 – 1D74F	***λ***	***μ***	***ν***	***ξ***	***ο***	***π***	***ρ***	***ς***	***σ***	***τ***	***υ***	***φ***	***χ***	***ψ***	***ω***	***∂***
U+1D750 – 1D75F	***ϵ***	***ϑ***	***ϰ***	***ϕ***	***ϱ***	***ϖ***	**Α**	**Β**	**Γ**	**Δ**	**Ε**	**Ζ**	**Η**	**Θ**	**Ι**	**Κ**
U+1D760 – 1D76F	**Λ**	**Μ**	**Ν**	**Ξ**	**Ο**	**Π**	**Ρ**	**ϴ**	**Σ**	**Τ**	**ϒ**	**Φ**	**Χ**	**Ψ**	**Ω**	**∇**
U+1D770 – 1D77F	**α**	**β**	**γ**	**δ**	**ε**	**ζ**	**η**	**θ**	**ι**	**κ**	**λ**	**μ**	**ν**	**ξ**	**ο**	**π**
U+1D780 – 1D78F	**ρ**	**ς**	**σ**	**τ**	**υ**	**φ**	**χ**	**ψ**	**ω**	**∂**	**ϵ**	**ϑ**	**ϰ**	**ϕ**	**ϱ**	**ϖ**
U+1D790 – 1D79F	***Α***	***Β***	***Γ***	***Δ***	***Ε***	***Ζ***	***Η***	***ϴ***	***Ι***	***Κ***	***Λ***	***Μ***	***Ν***	***Ξ***	***Ο***	***Π***
U+1D7A0 – 1D7AF	***Ρ***	***ϴ***	***Σ***	***Τ***	***ϒ***	***Φ***	***Χ***	***Ψ***	***Ω***	***∇***	***α***	***β***	***γ***	***δ***	***ε***	***ζ***
U+1D7B0 – 1D7BF	***η***	***θ***	***ι***	***κ***	***λ***	***μ***	***ν***	***ξ***	***ο***	***π***	***ρ***	***ς***	***σ***	***τ***	***υ***	***φ***
U+1D7C0 – 1D7CF	***χ***	***ψ***	***ω***	***∂***	***ϵ***	***ϑ***	***ϰ***	***ϕ***	***ϱ***	***ϖ***	**Ϝ**	ϝ	–	–	**0**	**1**
U+1D7D0 – 1D7DF	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	𝟘	𝟙	𝟚	𝟛	𝟜	𝟝	𝟞	𝟟
U+1D7E0 – 1D7EF	𝟠	𝟡	0	1	2	3	4	5	6	7	8	9	**0**	**1**	**2**	**3**
U+1D7F0 – 1D7FF	**4**	**5**	**6**	**7**	**8**	**9**	0	1	2	3	4	5	6	7	8	9

Arabic Mathematical Alphabetic Symbols

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
U+1EE00 – 1EE0F	ا	ب	ج	د	ـد	و	ز	ح	ط	ي	ك	ل	م	ن	س	ع
U+1EE10 – 1EE1F	ف	ص	ق	ر	ش	ت	ث	خ	ذ	ض	ظ	غ	ـب	ـل	ـف	ـق
U+1EE20 – 1EE2F	ـو	ـب	ـج	–	ـه	–	–	ـح	–	ـي	ـك	ـل	ـم	ـن	ـس	ـع
U+1EE30 – 1EE3F	ـف	ـص	ـق	–	ـش	ـت	ـث	ـخ	–	ـض	–	ـغ	–	–	–	–
U+1EE40 – 1EE4F	–	–	ـج	–	–	–	–	ـح	–	ـي	–	ـل	–	ـن	ـس	ـع
U+1EE50 – 1EE5F	–	ـص	ـق	–	ـش	–	–	ـخ	–	ـض	–	ـغ	–	ـل	–	ـع
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Table 12: LM Math vs. NewCM Math, *cont.*



Total number of glyphs shown from `Latin Modern Math`: 2045
Comparison font `New Computer Modern Math` has 0 missing and 2103 extra glyphs

B.5 Garamond Libre's Byzantine Musical Symbols

As a final example we exhibit the Byzantine Musical Symbols as provided by Garamond Libre. Command used:

```
\displayfonttable[range-start=1D000, range-end=1D0FF,
                  hex-digits=block,
```

```
  missing-glyph-color=black!50, color=black!75,
  statistics-format=Total number of glyphs in
    this block of #1 is #2]
{Garamond Libre}
```

Note that we have altered the text produced by the statistics, because the default is somewhat misleading if only a portion of the font is displayed. This produces the following table:

Table 13: Garamond Libre

Byzantine Musical Symbols

Total number of glyphs in this block of Garamond Libre is 246

◇ Frank Mittelbach
Mainz, Germany
https://www.latex-project.org
https://ctan.org/pkg/unicodefonttable