# The **lua-unicode-math** package[*]

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https://github.com/zauguin/lua-unicode-math

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Modern fonts are usually provided in OpenType format and are designed for Unicode based input. For mathematical fonts this usually means the use of fonts with an OpenType MATH table: Fonts containing special metadata needed to make them usable in a mathematical context.

In LuaTEX such fonts have traditionally been loaded with the **unicode-math** package. While this works, is very flexible and allows to use the same document in XeTEX and LuaTEX it has performance issues and it sometimes has unexpected interactions with the use of math versions. The **lua-unicode-math** is a specific LuaLATEX specific alternative which aims for higher performance and better integration with native LuaTEX features.

## 1 Usage instructions

### 1.1 Font packages

For most Opentype the recommended way to load them with **lua-unicode-math** is to use a dedicated package. Currently the following packages are shipped with **lua-unicode-math**:

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[*]This document corresponds to **lua-unicode-math** v0.8, dated 2026-03-24.

| Font | Package |
| --- | --- |
| Latin Modern Math | lum-lmodern |
| New Computer Modern Math | lum-newcomputermodern |
| New Computer Modern Sans Math | lum-newcomputermodernsans |
| STIX2 | lum-stix2 |
| XITS | lum-xits |
| TeX Gyre Pagella Math | lum-pagella |
| TeX Gyre DejaVu Math | lum-dejavu |
| TeX Gyre Bonum Math | lum-bonum |
| TeX Gyre Schola Math | lum-schola |
| TeX Gyre Termes Math | lum-termes |
| Fira Math | lum-fira |
| GFS Neohellenic Math | lum-gfsneohellenic |
| Erewhon Math | lum-erewhon |
| XCharter Math | lum-xcharter |
| Concrete Math | lum-concrete |
| Euler Math | lum-euler |
| Arsenal Math | lum-arsenal |
| Asana Math | lum-asana |
| Garamond Math | lum-garamond |
| Lete Sans Math | lum-lete-sans |
| Luciole Math | lum-luciole |
| Old Standard Math | lum-oldstandard |
| IBM Plex Math | lum-plex |
| Libertinus Math | lum-libertinus |
| KpMath Sans | lum-kpmath-sans |

## 1.2 Loading fonts by name

If you want to use a custom font, you can load fontspec and lua-unicode-math using

```
\usepackage{fontspec,lua-unicode-math}
```

This will load `Latin Modern Math` by default. Another math font can be loaded using \setmathfont using the same options as fontspec's \newfontfamily. For example, you can use to to configure the current math font using

```
\setmathfont[AutoFakeBold=1]{Latin Modern Math}
```

## 1.3 Writing maths

There are two ways of entering math: You can directly input Unicode math symbols or use regular LaTeX commands for symbols. All Unicode symbols are supported with the same commands as in unicode-math. For a full list see `texdoc unimath-symbols`.

## 1.4 Selecting math style

*Selecting math style is considered experimental and the interface is not stable.*

The unicode-math package allows to configure a math style through package options. It is used to configure which characters are upright or italic in the default math alphabet

(). To configure similar settings in lua-unicode-math, you can select an instance of the lua-unicode-math-style template.

There are four supported styles:

**TeX** Attempt to be compatible with traditional TeX conventions. This is the default. Everything is italic by default except for capital greek letters which are upright.

**ISO80000-2** Attempt to be compliant with ISO 80000-2 rules. Everything is italic.

**french** Latin lowercase is italic, everything else is upright.

**upright** Everything is upright.

One of the styles can be selected by running \UseInstance{lua-unicode-math-style}{⟨*style*⟩} in your preamble, e.g.

```
\UseInstance{lua-unicode-math-style}{ISO80000-2}
```

## 2 Implementation

```
1 \ProvidesExplPackage
2   {lua-unicode-math}
3   {2026-03-24}
4   {0.8}
5   {Opentype Math support for LuaLaTeX}
6
7 ⟨@@=l_uni_math⟩
8 \int_new:N \g__l_uni_math_font_count_int
9 \tl_new:N \l__l_uni_math_main_family_tl
10 \tl_new:N \l__l_uni_math_script_family_tl
11 \tl_new:N \l__l_uni_math_scriptscript_family_tl
12
13 \cs_generate_variant:Nn \tl_if_eq:nnT {o}
14
15 \msg_new:nnn { lua-unicode-math } { engine-unsupported } {
16   lua-unicode-math~can~only~be~used~with~LuaTeX.
17 }
18
19 \sys_if_engine_luatex:F {
20   \msg_critical:nn { lua-unicode-math } { engine-unsupported }
21 }
22
23 \msg_new:nnn { lua-unicode-math } { unicode-math-suppressed } {
24   You~tried~to~load~both~lua-unicode-math~and~unicode-math~
25   in~the~same~document.~This~is~not~supported,~unicode-math~
26   will~be~suppressed.~There~is~a~good~chance~that~this~will~
27   break~your~document.~Change~your~document~to~only~use~lua-unicode-math~
28   so~solve~this.
29 }
30 \msg_new:nnn { lua-unicode-math } { unicode-math-loaded } {
31   You~tried~to~load~lua-unicode-math~while~unicode-math~
32   was~already~loaded.~This~does~not~work.~Please~avoid~loading~
33   unicode-math.~If~that~is~not~possible~and~you~are~feeling~adventurous~
34   you~can~try~loading~the~lua-unicode-math~package~at~the~beginning~
```

```
35    of~your~document~instead~to~suppress~unicode-math.
36  }
37  \disable@package@load{unicode-math} {
38    \msg_warning:nn { lua-unicode-math } {unicode-math-suppressed }
39  }
40  \IfPackageLoadedTF {unicode-math} {
41    \msg_critical:nn { lua-unicode-math } {unicode-math-loaded }
42  } {}
43

44
45  \IfFormatAtLeastTF{2026/01/01}{}{
46    \cs_set:Npn \DeclareMathScriptfontMapping #1 #2 #3 #4 #5 #6 {
47      \cs_gset:cpn {  __nfss_mapped_scriptfont_family_sf_ #1 / #2 } { #3 / #4 }
48      \cs_gset:cpn {  __nfss_mapped_scriptfont_family_ssf_ #1 / #2 } { #5 / #6 }
49    }
50  }
51
52  \hook_gput_code:nnn { package/fontspec/after } {.} {
53    \bool_gset_false:N \g__fontspec_math_bool
54
55    \NewDocumentCommand \setmathfont { O{} m O{} } {
56      \int_incr:N \g__l_uni_math_font_count_int
57      \exp_args:Nc \newfontfamily
58        { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _text_font }
59        { #2 }
60        [ #1, #3, Script = Math, Renderer = Base ]
61      \tl_set_eq:NN \l__l_uni_math_main_family_tl \l_fontspec_family_tl
62
63      \exp_args:Nc \newfontfamily
64        { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int  _script_font }
65        { #2 }
66        [ #1, #3, Script = Math, Renderer = Base, Style = MathScript ]
67      \tl_set_eq:NN \l__l_uni_math_script_family_tl \l_fontspec_family_tl
68
69      \exp_args:Nc \newfontfamily
70        { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int  _scriptscript_font }
71        { #2 }
72        [ #1, #3, Script = Math, Renderer = Base, Style = MathScriptScript ]
73      \tl_set_eq:NN \l__l_uni_math_scriptscript_family_tl \l_fontspec_family_tl
74
75      \DeclareMathScriptfontMapping {TU} {\l__l_uni_math_main_family_tl} {TU} {\l__l_uni_math_s
76
77      \exp_args:NnnV \DeclareSymbolFont {lummain} {TU} \l__l_uni_math_main_family_tl {m} {n}
78      \exp_args:NnnnV \SetSymbolFont {lummain} {bold} {TU} \l__l_uni_math_main_family_tl {b} {n
79    }
80
81    \cs_set:Nn \__fontspec_setmainfont_hook:nn
82      {
83        \tl_if_eq:onT {\g__fontspec_mathrm_tl} {\rmdefault}
84          {
85            \fontspec_gset_family:Nnn \g__fontspec_mathrm_tl {Renderer=Basic,#1} {#2}
86            \__fontspec_setmathrm_hook:nn {#1} {#2}
87          }
88      }
```

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```
89    \cs_set:Nn \__fontspec_setsansfont_hook:nn
90      {
91        \tl_if_eq:onT {\g__fontspec_mathsf_tl} {\sfdefault}
92          {
93            \fontspec_gset_family:Nnn \g__fontspec_mathsf_tl {Renderer=Basic,#1} {#2}
94            \__fontspec_setmathsf_hook:nn {#1} {#2}
95          }
96      }
97    \cs_set:Nn \__fontspec_setmonofont_hook:nn
98      {
99        \tl_if_eq:onT {\g__fontspec_mathtt_tl} {\ttdefault}
100          {
101            \fontspec_gset_family:Nnn \g__fontspec_mathtt_tl {Renderer=Basic,#1} {#2}
102            \__fontspec_setmathtt_hook:nn {#1} {#2}
103          }
104      }
105    \cs_set:Nn \__fontspec_setmathrm_hook:nn
106      {
107        \SetMathAlphabet \mathrm { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \m
108        \SetMathAlphabet \mathit { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \m
109        \SetMathAlphabet \mathbf { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \b
110      }
111    \cs_set:Nn \__fontspec_setboldmathrm_hook:nn
112      {
113        \SetMathAlphabet \mathrm { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \m
114        \SetMathAlphabet \mathit { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \m
115        \SetMathAlphabet \mathbf { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \b
116      }
117    \cs_set:Nn \__fontspec_setmathsf_hook:nn
118      {
119        \SetMathAlphabet \mathsf { normal } \g_fontspec_encoding_tl \g__fontspec_mathsf_tl { \m
120        \SetMathAlphabet \mathsf { bold } \g_fontspec_encoding_tl \g__fontspec_mathsf_tl { \bfs
121      }
122    \cs_set:Nn \__fontspec_setmathtt_hook:nn
123      {
124        \SetMathAlphabet \mathtt { normal } \g_fontspec_encoding_tl \g__fontspec_mathtt_tl { \m
125        \SetMathAlphabet \mathtt { bold } \g_fontspec_encoding_tl \g__fontspec_mathtt_tl { \bfs
126      }
127    %
128    \__fontspec_setmathrm_hook:nn {} {}
129    \__fontspec_setmathsf_hook:nn {} {}
130    \__fontspec_setmathtt_hook:nn {} {}
131  }
132
133  \cs_set_protected:Npn \operator@font {
134    \@fontswitch { \font@warning{Math~mode~required~for~\string\operator@font.} } { \mathtextrm
135  }
136
137  \DeclareSymbolFont {lummain} {TU} {lmm} {m} {n}
138  \SetSymbolFont {lummain} {bold} {TU} {lmm} {b} {n}
139
140  \newattribute \mathfamattr
141
142  \cs_if_exist:NF \slimits@ {
```

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```
143    \cs_set_eq:NN \slimits@ \displaylimits
144  }
145  \cs_if_exist:NF \ilimits@ {
146    \cs_set_eq:NN \ilimits@ \nolimits
147  }
148  \chardef \g_l_uni_math_dots_binary_char = `
149  \chardef \g_l_uni_math_dots_comma_char = `…
150  \chardef \g_l_uni_math_dots_int_char = `
151  \chardef \g_l_uni_math_dots_other_char = `…
152
153  \cs_set_protected:Npn \DOTSB {
154    \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_binary_char
155  }
156
157  \cs_set_protected:Npn \DOTSX {
158    \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_other_char
159  }
160
161  \cs_set_protected:Npn \DOTSI {
162    \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_int_char
163  }
164
165  \cs_set_protected:Npn \DOTSC {
166    \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_comma_char
167  }
168
169  \lua_load_module:n { lua-unicode-math }
170
171  \cs_new_protected:Npn \__l_uni_math_define_mathstyle_cmd:n #1 {
172      \cs_new_protected:cpx { sym #1 } ##1 {
173        \group_begin:
174          \mathfamattr = \use:c { c__l_uni_math_attribute_sym #1 _int }
175          ##1
176        \group_end:
177      }
178  }
179
180  \int_new:N \g__l_uni_math_max_mathstyle_int
181  \int_gset:Nn \g__l_uni_math_max_mathstyle_int { 1024 }
182  \cs_new:Npn \__l_uni_math_provide_mathstyle_id:n #1 {
183    \cs_if_exist:cF { c__l_uni_math_attribute_sym #1 _int } {
184      \int_const:cn { c__l_uni_math_attribute_sym #1 _int } { \g__l_uni_math_max_mathstyle_int
185      \int_incr:N \g__l_uni_math_max_mathstyle_int
186      \__l_uni_math_define_mathstyle_cmd:n { #1 }
187    }
188  }
189
190  % This should be
191  % \tex_Umathcharnumdef:D \c__l_uni_math_attribute_symnormal_int = -"7FFFFFFF \scan_stop
192  % but LuaTeX is too buggy to save this correctly.
193  \tex_Umathchardef:D \c__l_uni_math_attribute_symnormal_int = "0 "80 "1 \scan_stop:
194  \__l_uni_math_define_mathstyle_cmd:n {normal}
195  \cs_gset:Npn \mathnormal { \symnormal }
196
```

```
197  \seq_set_from_clist:Nn \l_tmpa_seq {
198    up, rm, it, tt, bf, sf
199  }
200  \seq_map_inline:Nn \l_tmpa_seq {
201    \cs_new_eq:cc { mathtext #1 } { math #1 }
202  }
203  \prop_set_from_keyval:Nn \l_tmpa_prop {
204    up = 0, bfup = 1, it = 2, bfit = 3,
205    sfup = 4, bfsfup = 5, sfit = 6, bfsfit = 7,
206    cal = 8, bfcal = 9,
207    scr = 12, bfscr = 13,
208    frak = 16, bffrak = 17,
209    tt = 20,
210    bb = 24,
211  }
212  \prop_map_inline:Nn \l_tmpa_prop {
213    \int_const:cn { c__l_uni_math_attribute_sym #1 _int } { #2 }
214    \__l_uni_math_define_mathstyle_cmd:n { #1 }
215    \cs_set_eq:cc { math #1 } { sym #1 }
216  }
217  \cs_set_eq:NN \symrm \symup
218  \cs_set_eq:NN \mathtextup \mathtextrm
219  \cs_set_eq:NN \mathtextsf \mathsf
220  \cs_set:Npn \mathbfsf { \symbfsf }
221
222  \seq_map_inline:Nn \l_tmpa_seq {
223    \cs_set_eq:cc { math #1 } { mathtext #1 }
224  }
225
226  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathord :nn } #1 #2 {
227    \cs_set:Npx #1 {
228      \char_generate:nn {#2} {12}
229    }
230  }
231  \tl_map_inline:nn {\mathbin \mathclose \mathpunct \mathrel} {
232    \cs_new_eq:cc
233      { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N #1 :nn }
234      { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathord :nn }
235  }
236
237  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathop :nn } #1 #2 {
238    \exp_args:Nc \Umathchardef { \cs_to_str:N #1 op } 1~\symlummain #2~
239    \cs_set:Npx #1 {
240      \char_generate:nn {#2} {12}
241    }
242    \mathcode #2 = "8000~
243    \cs_set:cpx { \char_generate:nn {"FFFF} {12} \char_generate:nn {#2} {12} } {
244      \__l_uni_math_is_integral_cp:wTF #2 { \DOTSI } { \DOTSB }
245      \use:c { \cs_to_str:N #1 op }
246      \__l_uni_math_is_integral_cp:wTF #2 { \ilimits@ } { \slimits@ }
247    }
248  }
249
250  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathopen :nn } #1 #2 {
```

```
251   \token_if_eq_meaning:NNTF #1 \sqrt {
252     \cs_set:Npx \sqrtsign {
253       \Uradical \symlummain #2~
254     }
255     \cs_set:Npx \root ##1 \of {
256       \Uroot \symlummain #2~ { ##1 }
257     }
258   }{
259     \cs_set:Npx #1 {
260       \char_generate:nn {#2} {12}
261     }
262   }
263 }
264
265 % For a \mathalpha command starting with \mup like \mupalpha this will be called as
266 % \__l_uni_math_uproot_assign_mup_char:nNn {alpha} \Alpha {"...}
267 \cs_new_protected:Npn \__l_uni_math_uproot_assign_mup_char:nNn #1 #2 #3 {
268     \cs_set:Npx #2 {
269       \symup {\char_generate:nn {#3} {12}}
270     }
271     \cs_set:cpx {#1} {
272       \char_generate:nn {#3} {12}
273     }
274 }
275
276 % For a \mathalpha command not starting with \mup this will be called as \__l_uni_math_uproot
277 \cs_new_protected:Npn \__l_uni_math_uproot_assign_nonmup_alpha:nNn #1 #2 #3 {
278     \cs_set:Npx #2 {
279       \char_generate:nn {#3} {12}
280     }
281 }
282
283 \group_begin:
284 \cs_set:Npn \l_tmp_cs:n #1 {
285   \group_end:
286
287   \cs_new_protected:Npn \__l_uni_math__check_mup_helper:w ##1 #1 ##2 \q_mark ##3 ##4 \q_stop
288     ##3 {##2}
289   }
290
291   \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathalpha :nn } ##1 {
292     \exp_after:wN \__l_uni_math__check_mup_helper:w \token_to_str:N ##1 \q_mark \__l_uni_math
293   }
294 }
295
296 \exp_args:No \l_tmp_cs:n {
297   \token_to_str:N \mup
298 }
299
300 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathfence :nn } #1 #2 {
301   \cs_set:Npx #1 {
302     \char_generate:nn {#2} {12}
303   }
304   \cs_set:cpx {l \cs_to_str:N #1} {
```

```
305    \Udelimiter 4 ~ \symlummain #2 ~
306    }
307    \cs_set:cpx {r \cs_to_str:N #1} {
308      \Udelimiter 5 ~ \symlummain #2 ~
309    }
310  }
311
312  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccent :nn } #1 #2 {
313    \cs_set_protected:Npx #1 {
314      \Umathaccent fixed 0 ~ \symlummain #2 ~
315    }
316  }
317
318  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathbotaccent :nn } #1 #2 {
319    \cs_set:Npx #1 {
320      \Umathaccent bottom~fixed 0 ~ \symlummain #2 ~
321    }
322  }
323
324  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccentwide :nn } #1 #2 {
325    \cs_set:Npx #1 {
326      \Umathaccent 0 ~ \symlummain #2 ~
327    }
328  }
329
330  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathbotaccentwide :nn } #1 #2
331    \cs_set:Npx #1 {
332      \Umathaccent bottom 0 ~ \symlummain #2 ~
333    }
334  }
335
336  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccentoverlay :nn } #1 #2
337    \cs_set:Npx #1 {
338      \Umathaccent overlay 0 ~ \symlummain #2 ~
339    }
340  }
341
342  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathover :nn } #1 #2 {
343    \cs_set:Npx #1 ##1 {
344      \mathop {
345        \Udelimiterover \symlummain #2 { ##1 }
346      }
347      \limits
348    }
349  }
350
351  \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathunder :nn } #1 #2 {
352    \cs_set:Npx #1 ##1 {
353      \mathop {
354        \Udelimiterunder \symlummain #2 { ##1 }
355      }
356      \limits
357    }
358  }
```

9

```
359
360  \cs_generate_variant:Nn \exp_args:Ne {c}
361  \cs_new:Npn \UnicodeMathSymbol #1 #2 #3 #4 {
362    \use:c { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N #3 :nn }
363      {#2} {#1}
364  }
365  \input {unicode-math-table}
366  \cs_undefine:N \UnicodeMathSymbol
367
368  \cs_set_protected:Npn \triangle { \mathord { \bigtriangleup } }
369  \cs_set_protected:Npn \mathellipsis { \mathinner { \unicodeellipsis } }
370  \cs_set_protected:Npn \cdots { \mathinner { \unicodecdots } }
371
372  \clist_map_inline:nn {
373    \to \rightarrow,
374    \le \leq,
375    \ge \geq,
376    \neq \ne,
377    \bigcirc \mdlgwhtcircle,
378    \circ \vysmwhtcircle,
379    \bullet \smblkcircle,
380    \mathyen \yen,
381    \mathsterling \sterling,
382    \diamond \smwhtdiamond,
383    \emptyset \varnothing,
384    \hbar \hslash,
385    \land \wedge,
386    \lor \vee,
387    \owns \ni,
388    \gets \leftarrow,
389    \mathring \ocirc,
390    \lnot \neg,
391    \longdivision \longdivisionsign,
392    \backepsilon \upbackepsilon,
393    \eth \matheth,
394    \dotsb@ \cdots,
395    \@cdots \cdots,
396  } {
397    \cs_set_eq:NN #1
398  }
399
400  \cs_set_protected:cpx { \char_generate:nn {"FFFF} {12} ' } {
401    \prime_helper:w "2032~
402  }
403
404  \cs_set_protected:Npn \uproot #1 {
405    \__l_uni_math_uproot:w #1 \scan_stop:
406  }
407
408  \cs_set_protected:Npn \leftroot #1 {
409    \__l_uni_math_leftroot:w #1 \scan_stop:
410  }
```

Some fixes for amsmath: Since amsmath is defining \leftroot, \uproot and \root with non Unicode definitions, we need to hide our definitions and restore them afterwards. We

define \varGamma to stop amsmath from trying to define greek letter variants.

```
411 \tl_const:Nn \c__l_uni_math_amsmath_cmds_tl {
412   \uproot
413   \leftroot
414   \iint
415   \iiint
416   \iiiint
417   \dddot
418   \ddddot
419   \overleftrightarrow
420   \underrightarrow
421   \underleftarrow
422   \underleftrightarrow
423   \hat
424   \check
425   \tilde
426   \acute
427   \grave
428   \dot
429   \ddot
430   \breve
431   \bar
432   \vec
433   \mathring
434   \DOTSC
435   \DOTSI
436   \DOTSX
437   \DOTSB
438   \mdots@
439 }
440 \tl_const:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
441   \prod
442   \coprod
443   \bigwedge
444   \bigvee
445   \bigcap
446   \bigcup
447   \bigodot
448   \bigoplus
449   \bigotimes
450   \bigsqcup
451   \root
452   \int
453   \oint
454   \overrightarrow
455   \overleftarrow
456 }
457 \hook_gput_code:nnn { package/amsmath/before } {.} {
458   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
459     \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
460     \cs_undefine:N #1
461   }
462   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
463     \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
```

```
464    }
465    \cs_set:Npn \varGamma { \temporary_definition_do_not_use }
466  }
467  \hook_gput_code:nnn { package/amsmath/after } {.} {
468    \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
469      \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
470      \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
471    }
472    \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
473      \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
474      \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
475    }
476    \cs_undefine:N \varGamma
477  }
478  \addto@hook \every@math@size {
479    \__l_uni_math_every_math_size:
480  }
```

## 2.1 Customization

We defined templates to customize the behavior of lua-unicode-math. The main customization point for the user is the `lua-unicode-math-style` which selects how `\symnormal` and `\symbf` behave.

```
481  \NewTemplateType {lua-unicode-math-style} {0}
```

In the default interface `substyles` a mathstyle is defined in terms of two nested instances of type `lua-unicode-math-style-cmd`. This template allows to define or redefine a mathstyle like `normal`, `bf` or `up` with corresponding `\sym...` command.

```
482  \NewTemplateType {lua-unicode-math-style-cmd} {1}
483  \DeclareTemplateInterface {lua-unicode-math-style} {substyles} {0} {
484    normal: instance {lua-unicode-math-style-cmd},
485    bf: instance {lua-unicode-math-style-cmd},
486    sf: instance {lua-unicode-math-style-cmd},
487    bfsf: instance {lua-unicode-math-style-cmd},
488  }
```

By default a new style command instance is defined by defining mappings for the five main math alphabets to existing styles.

```
489  \DeclareTemplateInterface {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
490    Latin: tokenlist,
491    latin: tokenlist,
492    Greek: tokenlist,
493    greek: tokenlist,
494    digit: tokenlist,
495  }
```

By default a new style command instance is defined by defining mappings for the five main math alphabets to existing styles.

```
496  \DeclareTemplateCode {lua-unicode-math-style} {substyles} {0} {
497    normal = \__l_uni_math_instance_normal:n,
498    bf = \__l_uni_math_instance_bf:n,
499    sf = \__l_uni_math_instance_sf:n,
500    bfsf = \__l_uni_math_instance_bfsf:n,
501  } {
502    \__l_uni_math_instance_normal:n { normal }
```

```
503   \__l_uni_math_instance_bf:n { bf }
504   \__l_uni_math_instance_sf:n { sf }
505   \__l_uni_math_instance_bfsf:n { bfsf }
506 }
507 \cs_generate_variant:Nn \__l_uni_math_set_mathstyle_mappings:NNNNNN { cccccc }
508 \tl_new:N \l__l_uni_math_Latin_style_tl
509 \tl_new:N \l__l_uni_math_latin_style_tl
510 \tl_new:N \l__l_uni_math_Greek_style_tl
511 \tl_new:N \l__l_uni_math_greek_style_tl
512 \tl_new:N \l__l_uni_math_digit_style_tl
513 \DeclareTemplateCode {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
514   Latin = \l__l_uni_math_Latin_style_tl,
515   latin = \l__l_uni_math_latin_style_tl,
516   Greek = \l__l_uni_math_Greek_style_tl,
517   greek = \l__l_uni_math_greek_style_tl,
518   digit = \l__l_uni_math_digit_style_tl,
519 } {
520   \__l_uni_math_provide_mathstyle_id:n { #1 }
521   \__l_uni_math_set_mathstyle_mappings:cccccc
522     { c__l_uni_math_attribute_sym #1 _int }
523     { c__l_uni_math_attribute_sym \l__l_uni_math_Latin_style_tl _int }
524     { c__l_uni_math_attribute_sym \l__l_uni_math_latin_style_tl _int }
525     { c__l_uni_math_attribute_sym \l__l_uni_math_Greek_style_tl _int }
526     { c__l_uni_math_attribute_sym \l__l_uni_math_greek_style_tl _int }
527     { c__l_uni_math_attribute_sym \l__l_uni_math_digit_style_tl _int }
528 }
```

Finally we define some defaults.

```
529 \DeclareInstance{lua-unicode-math-style}{TeX}{substyles}{
530   normal = TeX,
531   bf = TeX-bf,
532   sf = upright-sf,
533   bfsf = upright-bfsf,
534 }
535 \DeclareInstance{lua-unicode-math-style}{ISO80000-2}{substyles}{
536   normal = ISO80000-2,
537   bf = ISO80000-2-bf,
538   sf = italic-sf,
539   bfsf = italic-bfsf,
540 }
541 \DeclareInstance{lua-unicode-math-style}{french}{substyles}{
542   normal = french,
543   bf = upright-bf,
544   sf = upright-sf,
545   bfsf = upright-bfsf,
546 }
547 \DeclareInstance{lua-unicode-math-style}{upright}{substyles}{
548   normal = upright,
549   bf = upright-bf,
550   sf = upright-sf,
551   bfsf = upright-bfsf,
552 }
553 \DeclareInstance{lua-unicode-math-style-cmd}{TeX}{alphabet-style-mapping}{
554   Latin = it,
555   latin = it,
```

```
556    Greek = up,
557    greek = it,
558    digit = up,
559 }
560 \DeclareInstance{lua-unicode-math-style-cmd}{TeX-bf}{alphabet-style-mapping}{
561    Latin = bfup,
562    latin = bfup,
563    Greek = bfup,
564    greek = bfit,
565    digit = bfup,
566 }
567 \DeclareInstance{lua-unicode-math-style-cmd}{ISO80000-2}{alphabet-style-mapping}{
568    Latin = it,
569    latin = it,
570    Greek = it,
571    greek = it,
572    digit = up,
573 }
574 \DeclareInstance{lua-unicode-math-style-cmd}{ISO80000-2-bf}{alphabet-style-mapping}{
575    Latin = bfit,
576    latin = bfit,
577    Greek = bfit,
578    greek = bfit,
579    digit = bfup,
580 }
581 \DeclareInstance{lua-unicode-math-style-cmd}{french}{alphabet-style-mapping}{
582    Latin = up,
583    latin = it,
584    Greek = up,
585    greek = up,
586    digit = up,
587 }
588 \DeclareInstance{lua-unicode-math-style-cmd}{upright}{alphabet-style-mapping}{
589    Latin = up,
590    latin = up,
591    Greek = up,
592    greek = up,
593    digit = up,
594 }
595 \DeclareInstance{lua-unicode-math-style-cmd}{upright-bf}{alphabet-style-mapping}{
596    Latin = bfup,
597    latin = bfup,
598    Greek = bfup,
599    greek = bfup,
600    digit = bfup,
601 }
602 \DeclareInstance{lua-unicode-math-style-cmd}{upright-sf}{alphabet-style-mapping}{
603    Latin = sfup,
604    latin = sfup,
605    Greek = sfup,
606    greek = sfup,
607    digit = sfup,
608 }
609 \DeclareInstance{lua-unicode-math-style-cmd}{italic-sf}{alphabet-style-mapping}{
```

```
610    Latin = sfit,
611    latin = sfit,
612    Greek = sfit,
613    greek = sfit,
614    digit = sfit,
615 }
616 \DeclareInstance{lua-unicode-math-style-cmd}{upright-bfsf}{alphabet-style-mapping}{
617    Latin = bfsfup,
618    latin = bfsfup,
619    Greek = bfsfup,
620    greek = bfsfup,
621    digit = bfsfup,
622 }
623 \DeclareInstance{lua-unicode-math-style-cmd}{italic-bfsf}{alphabet-style-mapping}{
624    Latin = bfsfit,
625    latin = bfsfit,
626    Greek = bfsfit,
627    greek = bfsfit,
628    digit = bfsfit,
629 }
630 \UseInstance {lua-unicode-math-style} {TeX}
```