

The lua-unicode-math package*

Marcel Krüger

tex@2krueger.de

<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`:

*This document corresponds to `lua-unicode-math` v0.10, dated 2026-07-31.

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

(`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 $\text{\TeX}$ 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   {2026-07-31}
4   {0.10}
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 \declare@file@substitution{amssymb.sty}{lua-unicode-math--amssymb.sty}
38 \declare@file@substitution{amsfonts.sty}{lua-unicode-math--amsfonts.sty}
39 \disable@package@load{unicode-math} {
40   \msg_warning:nn { lua-unicode-math } {unicode-math-suppressed }
41 }
42 \IfPackageLoadedTF {unicode-math} {
43   \msg_critical:nn { lua-unicode-math } {unicode-math-loaded }
44 } {}
45
46
47 \hook_gput_code:nnn { package/fontspect/after } {..} {
48   \bool_gset_false:N \g__fontspec_math_bool
49
50   \NewDocumentCommand \setmathfont { O{} m O{} } {
51     \int_incr:N \g__l_uni_math_font_count_int
52     \exp_args:Nc \newfontfamily
53       { \g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _text_font }
54       { #2 }
55     [ #1, #3, Script = Math, Renderer = Base ]
56     \tl_set_eq:NN \l__l_uni_math_main_family_tl \l_fontspec_family_tl
57
58     \exp_args:Nc \newfontfamily
59       { \g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _script_font }
60       { #2 }
61     [ #1, #3, Script = Math, Renderer = Base, Style = MathScript ]
62     \tl_set_eq:NN \l__l_uni_math_script_family_tl \l_fontspec_family_tl
63
64     \exp_args:Nc \newfontfamily
65       { \g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _scriptscript_font }
66       { #2 }
67     [ #1, #3, Script = Math, Renderer = Base, Style = MathScriptScript ]
68     \tl_set_eq:NN \l__l_uni_math_scriptscript_family_tl \l_fontspec_family_tl
69
70     \DeclareMathScriptfontMapping {TU} {\l__l_uni_math_main_family_tl} {TU} {\l__l_uni_math_s
71
72     \exp_args:NnnV \DeclareSymbolFont {lummain} {TU} \l__l_uni_math_main_family_tl {m} {n}
73     \exp_args:NnnnV \SetSymbolFont {lummain} {bold} {TU} \l__l_uni_math_main_family_tl {b} {n
74   }
75
76   \cs_set:Nn \__fontspec_setmainfont_hook:nn
77     {
78       \tl_if_eq:onT {\g__fontspec_mathrm_tl} {\rmdefault}
79       {
80         \fontspec_gset_family:Nnn \g__fontspec_mathrm_tl {Renderer=Basic,#1} {#2}
81         \__fontspec_setmathrm_hook:nn {#1} {#2}
82       }
83     }
84   \cs_set:Nn \__fontspec_setsansfont_hook:nn
85     {
86       \tl_if_eq:onT {\g__fontspec_mathsf_tl} {\sfdefault}
87       {
88         \fontspec_gset_family:Nnn \g__fontspec_mathsf_tl {Renderer=Basic,#1} {#2}

```

```

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

```

```

143 \chardef \g_l_uni_math_dots_binary_char = `
144 \chardef \g_l_uni_math_dots_comma_char = `...
145 \chardef \g_l_uni_math_dots_int_char = `
146 \chardef \g_l_uni_math_dots_other_char = `...
147
148 \cs_set_protected:Npn \DOTSB {
149   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_binary_char
150 }
151
152 \cs_set_protected:Npn \DOTSX {
153   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_other_char
154 }
155
156 \cs_set_protected:Npn \DOTSI {
157   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_int_char
158 }
159
160 \cs_set_protected:Npn \DOTSC {
161   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_comma_char
162 }
163
164 \lua_load_module:n { lua-unicode-math }
165
166 \cs_new_protected:Npn \__l_uni_math_define_mathstyle_cmd:n #1 {
167   \cs_new_protected:cpx { sym #1 } ##1 {
168     \group_begin:
169       \mathfamattr = \use:c { c__l_uni_math_attribute_sym #1 _int }
170       ##1
171     \group_end:
172   }
173 }
174
175 \int_new:N \g__l_uni_math_max_mathstyle_int
176 \int_gset:Nn \g__l_uni_math_max_mathstyle_int { 512 }
177 \cs_new:Npn \__l_uni_math_provide_mathstyle_id:n #1 {
178   \cs_if_exist:cF { c__l_uni_math_attribute_sym #1 _int } {
179     \int_const:cn { c__l_uni_math_attribute_sym #1 _int } { \g__l_uni_math_max_mathstyle_int
180     \int_incr:N \g__l_uni_math_max_mathstyle_int
181     \__l_uni_math_define_mathstyle_cmd:n { #1 }
182   }
183 }
184
185 % This should be
186 % \tex_Umathcharnumdef:D \c__l_uni_math_attribute_unset_int = -"7FFFFFFF \scan_stop
187 % but LuaTeX is too buggy to save this correctly.
188 \tex_Umathchardef:D \c__l_uni_math_attribute_unset_int = "0 "80 "1 \scan_stop:
189 \tex_Umathcharnumdef:D \c__l_uni_math_attribute_symnormal_int = 1023 \scan_stop:
190 \cs_new_protected:Npn \symnormal #1 {
191   \group_begin:
192     \mathfamattr = \c__l_uni_math_attribute_unset_int
193     #1
194   \group_end:
195 }
196 \cs_gset:Npn \mathnormal { \symnormal }

```

```

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

```

```

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

```

```

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

```

```

359 }
360
361 \cs_generate_variant:Nn \exp_args:Ne {c}
362 \cs_new:Npn \UnicodeMathSymbol #1 #2 #3 #4 {
363   \use:c { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N #3 :nn }
364   {#2} {#1}
365 }
366 \input {unicode-math-table}
367 \cs_undefine:N \UnicodeMathSymbol
368
369 \cs_set_protected:Npn \triangle { \mathord { \bigtriangleup } }
370 \cs_set_protected:Npn \mathellipsis { \mathinner { \unicodeellipsis } }
371 \cs_set_protected:Npn \cdots { \mathinner { \unicodcdots } }
372
373 \clist_map_inline:nn {
374   \to \rightarrow,
375   \le \leq,
376   \ge \geq,
377   \neq \neq,
378   \bigcirc \mdlgwhtcircle,
379   \circ \vysmwhtcircle,
380   \bullet \smbkcircle,
381   \yen \mathyen,
382   \sterling \mathsterling,
383   \diamond \smwhtdiamond,
384   \emptyset \varnothing,
385   \hbar \hslash,
386   \land \wedge,
387   \lor \vee,
388   \owns \ni,
389   \gets \leftarrow,
390   \mathring \ocirc,
391   \lnot \neg,
392   \longdivision \longdivisionsign,
393   \backepsilon \upbackepsilon,
394   \eth \matheth,
395   \dotsb@ \cdots,
396   \@cdots \cdots,
397   \lvert \Vert,
398 } {
399   \cs_set_eq:NN #1
400 }
401
402 \cs_new:Npn __l_uni_math_set_math_active:npx #1 {
403   \char_set_mathcode:nn { #1 } { "8000 }
404   \cs_set_protected:cpx { \char_generate:nn {"FFFF} {12} \char_generate:nn { #1 } {12} }
405 }
406
407 __l_uni_math_set_math_active:npx { ``' } {
408   \prime_helper:w "2032~
409 }
410
411 __l_uni_math_set_math_active:npx { ``` } {
412   \prime_helper:w "2035~

```

```

413 }
414
415 \int_step_inline:nnn {"0"} {"F"} {
416   \__l_uni_math_set_math_active:npx { "FE00 + #1 } {
417     \__l_uni_math_variation_selector:w #1 ~
418   }
419 }
420
421 \int_step_inline:nnn {"10"} {"FF"} {
422   \__l_uni_math_set_math_active:npx { "E00F0 + #1 } {
423     \__l_uni_math_variation_selector:w #1 ~
424   }
425 }
426
427 \cs_set_protected:Npn \uproot #1 {
428   \__l_uni_math_uproot:w #1 \scan_stop:
429 }
430
431 \cs_set_protected:Npn \leftroot #1 {
432   \__l_uni_math_leftroot:w #1 \scan_stop:
433 }

```

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.

```

434 \tl_const:Nn \c__l_uni_math_amsmath_cmds_tl {
435   \uproot
436   \leftroot
437   \iint
438   \iiint
439   \iiint
440   \dddot
441   \ddddot
442   \overlefttriarrow
443   \underrightarrow
444   \underleftarrow
445   \underleftriarrow
446   \hat
447   \check
448   \tilde
449   \acute
450   \grave
451   \dot
452   \ddot
453   \breve
454   \bar
455   \vec
456   \mathring
457   \DOTSC
458   \DOTSI
459   \DOTSX
460   \DOTSB
461   \mdots@
462   \cdots

```

```

463 \ldots
464 }
465 \tl_const:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
466 \prod
467 \coprod
468 \bigwedge
469 \bigvee
470 \bigcap
471 \bigcup
472 \bigodot
473 \bigoplus
474 \bigotimes
475 \bigsqcup
476 \root
477 \int
478 \oint
479 \overrightarrow
480 \overleftarrow
481 }
482 \hook_gput_code:nnn { package/amsmath/before } {.} {
483 \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
484 \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
485 \cs_undefine:N #1
486 }
487 \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
488 \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
489 }
490 \cs_set:Npn \varGamma { \temporary_definition_do_not_use }
491 }
492 \hook_gput_code:nnn { package/amsmath/after } {.} {
493 \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
494 \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
495 \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
496 }
497 \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
498 \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
499 \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
500 }
501 \cs_undefine:N \varGamma
502 }
503 \addto@hook \every@math@size {
504 \__l_uni_math_every_math_size:
505 }

```

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.

```

506 \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.

```

507 \NewTemplateType {lua-unicode-math-style-cmd} {1}

```

```

508 \DeclareTemplateInterface {lua-unicode-math-style} {substyles} {0} {
509   normal: instance {lua-unicode-math-style-cmd},
510   bf: instance {lua-unicode-math-style-cmd},
511   sf: instance {lua-unicode-math-style-cmd},
512   bfsf: instance {lua-unicode-math-style-cmd},
513 }

```

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

```

514 \DeclareTemplateInterface {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
515   Latin: tokenlist,
516   latin: tokenlist,
517   Greek: tokenlist,
518   greek: tokenlist,
519   digit: tokenlist,
520 }

```

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

```

521 \DeclareTemplateCode {lua-unicode-math-style} {substyles} {0} {
522   normal = \_l\_l\_uni\_math\_instance\_normal:n,
523   bf = \_l\_l\_uni\_math\_instance\_bf:n,
524   sf = \_l\_l\_uni\_math\_instance\_sf:n,
525   bfsf = \_l\_l\_uni\_math\_instance\_bfsf:n,
526 } {
527   \_l\_l\_uni\_math\_instance\_normal:n { normal }
528   \_l\_l\_uni\_math\_instance\_bf:n { bf }
529   \_l\_l\_uni\_math\_instance\_sf:n { sf }
530   \_l\_l\_uni\_math\_instance\_bfsf:n { bfsf }
531 }
532 \cs_generate_variant:Nn \_l\_l\_uni\_math\_set\_mathstyle\_mappings:NNNNNN { cccccc }
533 \tl_new:N \l\_l\_l\_uni\_math\_Latin\_style\_tl
534 \tl_new:N \l\_l\_l\_uni\_math\_latin\_style\_tl
535 \tl_new:N \l\_l\_l\_uni\_math\_Greek\_style\_tl
536 \tl_new:N \l\_l\_l\_uni\_math\_greek\_style\_tl
537 \tl_new:N \l\_l\_l\_uni\_math\_digit\_style\_tl
538 \DeclareTemplateCode {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
539   Latin = \l\_l\_l\_uni\_math\_Latin\_style\_tl,
540   latin = \l\_l\_l\_uni\_math\_latin\_style\_tl,
541   Greek = \l\_l\_l\_uni\_math\_Greek\_style\_tl,
542   greek = \l\_l\_l\_uni\_math\_greek\_style\_tl,
543   digit = \l\_l\_l\_uni\_math\_digit\_style\_tl,
544 } {
545   \_l\_l\_uni\_math\_provide\_mathstyle\_id:n { #1 }
546   \_l\_l\_uni\_math\_set\_mathstyle\_mappings:ccccc
547   { c\_l\_l\_uni\_math\_attribute\_sym #1\_int }
548   { c\_l\_l\_uni\_math\_attribute\_sym \l\_l\_l\_uni\_math\_Latin\_style\_tl\_int }
549   { c\_l\_l\_uni\_math\_attribute\_sym \l\_l\_l\_uni\_math\_latin\_style\_tl\_int }
550   { c\_l\_l\_uni\_math\_attribute\_sym \l\_l\_l\_uni\_math\_Greek\_style\_tl\_int }
551   { c\_l\_l\_uni\_math\_attribute\_sym \l\_l\_l\_uni\_math\_greek\_style\_tl\_int }
552   { c\_l\_l\_uni\_math\_attribute\_sym \l\_l\_l\_uni\_math\_digit\_style\_tl\_int }
553 }

```

Finally we define some defaults.

```

554 \DeclareInstance{lua-unicode-math-style}{TeX}{substyles}{

```

```

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

```

```

609   Greek = up,
610   greek = up,
611   digit = up,
612 }
613 \DeclareInstance{lua-unicode-math-style-cmd}{upright}{alphabet-style-mapping}{
614   Latin = up,
615   latin = up,
616   Greek = up,
617   greek = up,
618   digit = up,
619 }
620 \DeclareInstance{lua-unicode-math-style-cmd}{upright-bf}{alphabet-style-mapping}{
621   Latin = bfup,
622   latin = bfup,
623   Greek = bfup,
624   greek = bfup,
625   digit = bfup,
626 }
627 \DeclareInstance{lua-unicode-math-style-cmd}{upright-sf}{alphabet-style-mapping}{
628   Latin = sfup,
629   latin = sfup,
630   Greek = sfup,
631   greek = sfup,
632   digit = sfup,
633 }
634 \DeclareInstance{lua-unicode-math-style-cmd}{italic-sf}{alphabet-style-mapping}{
635   Latin = sfit,
636   latin = sfit,
637   Greek = sfit,
638   greek = sfit,
639   digit = sfit,
640 }
641 \DeclareInstance{lua-unicode-math-style-cmd}{upright-bfsf}{alphabet-style-mapping}{
642   Latin = bfsfup,
643   latin = bfsfup,
644   Greek = bfsfup,
645   greek = bfsfup,
646   digit = bfsfup,
647 }
648 \DeclareInstance{lua-unicode-math-style-cmd}{italic-bfsf}{alphabet-style-mapping}{
649   Latin = bfsfit,
650   latin = bfsfit,
651   Greek = bfsfit,
652   greek = bfsfit,
653   digit = bfsfit,
654 }
655 \UseInstance {lua-unicode-math-style} {TeX}

```