

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`:

*This document corresponds to `lua-unicode-math` v0.9, dated 2026-06-18.

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 \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   {2026-06-18}
4   {0.9}
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 \msg_new:nnn { lua-unicode-math } { legacy-symbol-package-suppressed } {
38   You~tried~to~load~#1~in~a~document~using~lua-unicode-math.~
39   This~is~no~useful~since~your~Unicode-math-font-is~already~
40   providing~these~symbols.~The~package~will~be~skipped.
41 }
42 \disable@package@load{amssymb} {
43   \msg_note:nnn { lua-unicode-math } { legacy-symbol-package-suppressed } {amssymb}
44 }
45 \disable@package@load{amsfonts} {
46   \msg_note:nnn { lua-unicode-math } { legacy-symbol-package-suppressed } {amsfonts}
47 }
48 \disable@package@load{unicode-math} {
49   \msg_warning:nn { lua-unicode-math } {unicode-math-suppressed }
50 }
51 \IfPackageLoadedTF {unicode-math} {
52   \msg_critical:nn { lua-unicode-math } {unicode-math-loaded }
53 } {}
54
55
56 \IfFormatAtLeastTF{2026/01/01}{}{
57   \cs_set:Npn \DeclareMathScriptfontMapping #1 #2 #3 #4 #5 #6 {
58     \cs_gset:cpn { __nfss_mapped_scriptfont_family_sf_ #1 / #2 } { #3 / #4 }
59     \cs_gset:cpn { __nfss_mapped_scriptfont_family_ssf_ #1 / #2 } { #5 / #6 }
60   }
61 }
62
63 \hook_gput_code:nnn { package/fontspect/after } { . } {
64   \bool_gset_false:N \g__fontspec_math_bool
65
66   \NewDocumentCommand \setmathfont { O{} m O{} } {
67     \int_incr:N \g__l_uni_math_font_count_int
68     \exp_args:Nc \newfontfamily
69       { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _text_font }
70       { #2 }
71     [ #1, #3, Script = Math, Renderer = Base ]
72     \tl_set_eq:NN \l__l_uni_math_main_family_tl \l_fontspec_family_tl
73
74     \exp_args:Nc \newfontfamily
75       { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _script_font }
76       { #2 }
77     [ #1, #3, Script = Math, Renderer = Base, Style = MathScript ]
78     \tl_set_eq:NN \l__l_uni_math_script_family_tl \l_fontspec_family_tl
79
80     \exp_args:Nc \newfontfamily
81       { g__l_uni_math_font_ \int_use:N \g__l_uni_math_font_count_int _scriptscript_font }
82       { #2 }
83     [ #1, #3, Script = Math, Renderer = Base, Style = MathScriptScript ]
84     \tl_set_eq:NN \l__l_uni_math_scriptscript_family_tl \l_fontspec_family_tl
85
86     \DeclareMathScriptfontMapping {TU} {\l__l_uni_math_main_family_tl} {TU} {\l__l_uni_math_s
87
88     \exp_args:NnnV \DeclareSymbolFont {lummain} {TU} \l__l_uni_math_main_family_tl {m} {n}

```

```

89     \exp_args:NnnV \SetSymbolFont {lummy} {bold} {TU} \l__l__uni_math_main_family_tl {b} {n
90 }
91
92 \cs_set:Nn \__fontspec_setmainfont_hook:nn
93 {
94     \tl_if_eq:onT {\g__fontspec_mathrm_tl} {\rmdefault}
95     {
96         \fontspec_gset_family:Nnn \g__fontspec_mathrm_tl {Renderer=Basic,#1} {#2}
97         \__fontspec_setmathrm_hook:nn {#1} {#2}
98     }
99 }
100 \cs_set:Nn \__fontspec_setsansfont_hook:nn
101 {
102     \tl_if_eq:onT {\g__fontspec_mathsf_tl} {\sfdefault}
103     {
104         \fontspec_gset_family:Nnn \g__fontspec_mathsf_tl {Renderer=Basic,#1} {#2}
105         \__fontspec_setmathsf_hook:nn {#1} {#2}
106     }
107 }
108 \cs_set:Nn \__fontspec_setmonofont_hook:nn
109 {
110     \tl_if_eq:onT {\g__fontspec_mathtt_tl} {\ttdefault}
111     {
112         \fontspec_gset_family:Nnn \g__fontspec_mathtt_tl {Renderer=Basic,#1} {#2}
113         \__fontspec_setmathtt_hook:nn {#1} {#2}
114     }
115 }
116 \cs_set:Nn \__fontspec_setmathrm_hook:nn
117 {
118     \SetMathAlphabet \mathrm { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \m
119     \SetMathAlphabet \mathit { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \m
120     \SetMathAlphabet \mathbf { normal } \g_fontspec_encoding_tl \g__fontspec_mathrm_tl { \b
121 }
122 \cs_set:Nn \__fontspec_setboldmathrm_hook:nn
123 {
124     \SetMathAlphabet \mathrm { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \m
125     \SetMathAlphabet \mathit { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \m
126     \SetMathAlphabet \mathbf { bold } \g_fontspec_encoding_tl \g__fontspec_bfmathrm_tl { \b
127 }
128 \cs_set:Nn \__fontspec_setmathsf_hook:nn
129 {
130     \SetMathAlphabet \mathsf { normal } \g_fontspec_encoding_tl \g__fontspec_mathsf_tl { \m
131     \SetMathAlphabet \mathsf { bold } \g_fontspec_encoding_tl \g__fontspec_mathsf_tl { \bfs
132 }
133 \cs_set:Nn \__fontspec_setmathtt_hook:nn
134 {
135     \SetMathAlphabet \mathtt { normal } \g_fontspec_encoding_tl \g__fontspec_mathtt_tl { \m
136     \SetMathAlphabet \mathtt { bold } \g_fontspec_encoding_tl \g__fontspec_mathtt_tl { \bfs
137 }
138 %
139 \__fontspec_setmathrm_hook:nn {} {}
140 \__fontspec_setmathsf_hook:nn {} {}
141 \__fontspec_setmathtt_hook:nn {} {}
142 }

```

```

143
144 \cs_set_protected:Npn \operator@font {
145   \@fontswitch { \font@warning{Math-mode-required-for-\string\operator@font.} } { \mathtextrm
146 }
147
148 \DeclareSymbolFont {lummain} {TU} {lmm} {m} {n}
149 \SetSymbolFont {lummain} {bold} {TU} {lmm} {b} {n}
150
151 \newattribute \mathfamattr
152
153 \cs_if_exist:NF \slimits@ {
154   \cs_set_eq:NN \slimits@ \displaylimits
155 }
156 \cs_if_exist:NF \ilimits@ {
157   \cs_set_eq:NN \ilimits@ \nolimits
158 }
159 \chardef \g_l_uni_math_dots_binary_char = `
160 \chardef \g_l_uni_math_dots_comma_char = `...
161 \chardef \g_l_uni_math_dots_int_char = `
162 \chardef \g_l_uni_math_dots_other_char = `...
163
164 \cs_set_protected:Npn \DOTSB {
165   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_binary_char
166 }
167
168 \cs_set_protected:Npn \DOTSX {
169   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_other_char
170 }
171
172 \cs_set_protected:Npn \DOTSI {
173   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_int_char
174 }
175
176 \cs_set_protected:Npn \DOTSC {
177   \__l_uni_math_set_previous_dots_type:w \g_l_uni_math_dots_comma_char
178 }
179
180 \lua_load_module:n { lua-unicode-math }
181
182 \cs_new_protected:Npn \__l_uni_math_define_mathstyle_cmd:n #1 {
183   \cs_new_protected:cpx { sym #1 } ##1 {
184     \group_begin:
185       \mathfamattr = \use:c { c__l_uni_math_attribute_sym #1 _int }
186       ##1
187     \group_end:
188   }
189 }
190
191 \int_new:N \g__l_uni_math_max_mathstyle_int
192 \int_gset:Nn \g__l_uni_math_max_mathstyle_int { 1024 }
193 \cs_new:Npn \__l_uni_math_provide_mathstyle_id:n #1 {
194   \cs_if_exist:cF { c__l_uni_math_attribute_sym #1 _int } {
195     \int_const:cn { c__l_uni_math_attribute_sym #1 _int } { \g__l_uni_math_max_mathstyle_int
196     \int_incr:N \g__l_uni_math_max_mathstyle_int

```

```

197   \_l\_uni\_math\_define\_mathstyle\_cmd:n { #1 }
198   }
199 }
200
201 % This should be
202 % \tex_Umathcharnumdef:D \c\_l\_uni\_math\_attribute\_symnormal\_int = -"7FFFFFFF \scan_stop
203 % but LuaTeX is too buggy to save this correctly.
204 \tex_Umathchardef:D \c\_l\_uni\_math\_attribute\_symnormal\_int = "0 "80 "1 \scan_stop:
205 \_l\_uni\_math\_define\_mathstyle\_cmd:n {normal}
206 \cs_gset:Npn \mathnormal { \symnormal }
207
208 \seq_set_from_clist:Nn \l\_tmpa\_seq {
209   up, rm, it, tt, bf, sf
210 }
211 \seq_map_inline:Nn \l\_tmpa\_seq {
212   \cs_new_eq:cc { mathtext #1 } { math #1 }
213 }
214 \prop_set_from_keyval:Nn \l\_tmpa\_prop {
215   up = 0, bfup = 1, it = 2, bfit = 3,
216   sfup = 4, bfsfup = 5, sfit = 6, bfsfit = 7,
217   cal = 8, bfcalf = 9,
218   scr = 12, bfscr = 13,
219   frak = 16, bffrak = 17,
220   tt = 20,
221   bb = 24,
222 }
223 \prop_map_inline:Nn \l\_tmpa\_prop {
224   \int_const:cn { c\_l\_uni\_math\_attribute\_sym #1\_int } { #2 }
225   \_l\_uni\_math\_define\_mathstyle\_cmd:n { #1 }
226   \cs_set_eq:cc { math #1 } { sym #1 }
227 }
228 \cs_set_eq:NN \symrm \symup
229 \cs_set_eq:NN \mathtextup \mathtextrm
230 \cs_set_eq:NN \mathtextsf \mathsf
231 \cs_set:Npn \mathbbsf { \symbbsf }
232
233 \seq_map_inline:Nn \l\_tmpa\_seq {
234   \cs_set_eq:cc { math #1 } { mathtext #1 }
235 }
236
237 \cs_new:cpn { \_l\_uni\_math\_UnicodeMathSymbol\_ \token\_to\_str:N \mathord :nn } #1 #2 {
238   \cs_set:Npx #1 {
239     \char_generate:nn {#2} {12}
240   }
241 }
242 \tl_map_inline:nn {\mathbin \mathclose \mathpunct \mathrel} {
243   \cs_new_eq:cc
244     { \_l\_uni\_math\_UnicodeMathSymbol\_ \token\_to\_str:N #1 :nn }
245     { \_l\_uni\_math\_UnicodeMathSymbol\_ \token\_to\_str:N \mathord :nn }
246 }
247
248 \cs_new:cpn { \_l\_uni\_math\_UnicodeMathSymbol\_ \token\_to\_str:N \mathop :nn } #1 #2 {
249   \exp_args:Nc \Umathchardef { \cs\_to\_str:N #1 op } 1~\symlummain #2~
250   \cs_set:Npx #1 {

```

```

251   \char_generate:nn {#2} {12}
252 }
253 \mathcode #2 = "8000~
254 \cs_set:cpx { \char_generate:nn {"FFFF} {12} \char_generate:nn {#2} {12} } {
255   \__l_uni_math_is_integral_cp:wTF #2 { \DOTSI } { \DOTSB }
256   \use:c { \cs_to_str:N #1 op }
257   \__l_uni_math_is_integral_cp:wTF #2 { \ilimits@ } { \slimits@ }
258 }
259 }
260
261 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathopen :nn } #1 #2 {
262   \token_if_eq_meaning:NNTF #1 \sqrt {
263     \cs_set:Npx \sqrtsign {
264       \Uradical \symlummain #2~
265     }
266     \cs_set:Npx \root ##1 \of {
267       \Uroot \symlummain #2~ { ##1 }
268     }
269   }{
270     \cs_set:Npx #1 {
271       \char_generate:nn {#2} {12}
272     }
273   }
274 }
275
276 % For a \mathalpha command starting with \mup like \mupalpha this will be called as
277 % \__l_uni_math_uproot_assign_mup_char:nNn {alpha} \Alpha {"...}
278 \cs_new_protected:Npn \__l_uni_math_uproot_assign_mup_char:nNn #1 #2 #3 {
279   \cs_set:Npx #2 {
280     \symup {\char_generate:nn {#3} {12}}
281   }
282   \cs_set:cpx {#1} {
283     \char_generate:nn {#3} {12}
284   }
285 }
286
287 % For a \mathalpha command not starting with \mup this will be called as \__l_uni_math_uproot
288 \cs_new_protected:Npn \__l_uni_math_uproot_assign_nonmup_alpha:nNn #1 #2 #3 {
289   \cs_set:Npx #2 {
290     \char_generate:nn {#3} {12}
291   }
292 }
293
294 \group_begin:
295 \cs_set:Npn \l_tmp_cs:n #1 {
296   \group_end:
297
298   \cs_new_protected:Npn \__l_uni_math__check_mup_helper:w ##1 #1 ##2 \q_mark ##3 ##4 \q_stop
299     ##3 {##2}
300 }
301
302 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathalpha :nn } ##1 {
303   \exp_after:wN \__l_uni_math__check_mup_helper:w \token_to_str:N ##1 \q_mark \__l_uni_math
304 }

```



```

305 }
306
307 \exp_args:No \l_tmp_cs:n {
308   \token_to_str:N \mup
309 }
310
311 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathfence :nn } #1 #2 {
312   \cs_set:Npx #1 {
313     \char_generate:nn {#2} {12}
314   }
315   \cs_set:cpx {l \cs_to_str:N #1} {
316     \Udelimiter 4 ~ \symlummain #2 ~
317   }
318   \cs_set:cpx {r \cs_to_str:N #1} {
319     \Udelimiter 5 ~ \symlummain #2 ~
320   }
321 }
322
323 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccent :nn } #1 #2 {
324   \cs_set_protected:Npx #1 {
325     \Umathaccent fixed 0 ~ \symlummain #2 ~
326   }
327 }
328
329 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathbotaccent :nn } #1 #2 {
330   \cs_set:Npx #1 {
331     \Umathaccent bottom~fixed 0 ~ \symlummain #2 ~
332   }
333 }
334
335 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccentwide :nn } #1 #2 {
336   \cs_set:Npx #1 {
337     \Umathaccent 0 ~ \symlummain #2 ~
338   }
339 }
340
341 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathbotaccentwide :nn } #1 #2 {
342   \cs_set:Npx #1 {
343     \Umathaccent bottom 0 ~ \symlummain #2 ~
344   }
345 }
346
347 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathaccentoverlay :nn } #1 #2 {
348   \cs_set:Npx #1 {
349     \Umathaccent overlay 0 ~ \symlummain #2 ~
350   }
351 }
352
353 \cs_new:cpn { __l_uni_math_UnicodeMathSymbol_ \token_to_str:N \mathover :nn } #1 #2 {
354   \cs_set:Npx #1 ##1 {
355     \mathop {
356       \Udelimiterover \symlummain #2 { ##1 }
357     }
358     \limits

```

```

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

```

```

413 }
414
415 \cs_set_protected:Npn \uproot #1 {
416   \__l_uni_math_uproot:w #1 \scan_stop:
417 }
418
419 \cs_set_protected:Npn \leftroot #1 {
420   \__l_uni_math_leftroot:w #1 \scan_stop:
421 }

```

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.

```

422 \tl_const:Nn \c__l_uni_math_amsmath_cmds_tl {
423   \uproot
424   \leftroot
425   \iint
426   \iiint
427   \iiiiint
428   \dddot
429   \ddddot
430   \overlefttriarrow
431   \underrightarrow
432   \underleftarrow
433   \underleftrightharrow
434   \hat
435   \check
436   \tilde
437   \acute
438   \grave
439   \dot
440   \ddot
441   \breve
442   \bar
443   \vec
444   \mathring
445   \DOTSC
446   \DOTSI
447   \DOTSX
448   \DOTSB
449   \mdots@
450   \cdots
451   \ldots
452 }
453 \tl_const:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
454   \prod
455   \coprod
456   \bigwedge
457   \bigvee
458   \bigcap
459   \bigcup
460   \bigodot
461   \bigoplus
462   \bigotimes

```

```

463 \bigsupcup
464 \root
465 \int
466 \oint
467 \overrightarrow
468 \overleftarrow
469 }
470 \hook_gput_code:nnn { package/amsmath/before } {..} {
471   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
472     \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
473     \cs_undefine:N #1
474   }
475   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
476     \cs_new_eq:cN { __l_uni_math_saved_ \cs_to_str:N #1 } #1
477   }
478   \cs_set:Npn \varGamma { \temporary_definition_do_not_use }
479 }
480 \hook_gput_code:nnn { package/amsmath/after } {..} {
481   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_tl {
482     \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
483     \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
484   }
485   \tl_map_inline:Nn \c__l_uni_math_amsmath_cmds_defined_tl {
486     \cs_set_eq:Nc #1 { __l_uni_math_saved_ \cs_to_str:N #1 }
487     \cs_undefine:c { __l_uni_math_saved_ \cs_to_str:N #1 }
488   }
489   \cs_undefine:N \varGamma
490 }
491 \addto@hook \every@math@size {
492   \__l_uni_math_every_math_size:
493 }

```

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 `\symsf` behave.

```

494 \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.

```

495 \NewTemplateType {lua-unicode-math-style-cmd} {1}
496 \DeclareTemplateInterface {lua-unicode-math-style} {substyles} {0} {
497   normal: instance {lua-unicode-math-style-cmd},
498   bf: instance {lua-unicode-math-style-cmd},
499   sf: instance {lua-unicode-math-style-cmd},
500   bfsf: instance {lua-unicode-math-style-cmd},
501 }

```

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

```

502 \DeclareTemplateInterface {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
503   Latin: tokenlist,
504   latin: tokenlist,

```

```

505   Greek: tokenlist,
506   greek: tokenlist,
507   digit: tokenlist,
508 }

```

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

```

509 \DeclareTemplateCode {lua-unicode-math-style} {substyles} {0} {
510   normal = \_l\_l\_uni\_math\_instance\_normal:n,
511   bf = \_l\_l\_uni\_math\_instance\_bf:n,
512   sf = \_l\_l\_uni\_math\_instance\_sf:n,
513   bfsf = \_l\_l\_uni\_math\_instance\_bfsf:n,
514 } {
515   \_l\_l\_uni\_math\_instance\_normal:n { normal }
516   \_l\_l\_uni\_math\_instance\_bf:n { bf }
517   \_l\_l\_uni\_math\_instance\_sf:n { sf }
518   \_l\_l\_uni\_math\_instance\_bfsf:n { bfsf }
519 }
520 \cs_generate_variant:Nn \_l\_l\_uni\_math\_set\_mathstyle\_mappings:NNNNNN { cccccc }
521 \tl_new:N \l\_l\_uni\_math\_Latin\_style\_tl
522 \tl_new:N \l\_l\_uni\_math\_latin\_style\_tl
523 \tl_new:N \l\_l\_uni\_math\_Greek\_style\_tl
524 \tl_new:N \l\_l\_uni\_math\_greek\_style\_tl
525 \tl_new:N \l\_l\_uni\_math\_digit\_style\_tl
526 \DeclareTemplateCode {lua-unicode-math-style-cmd} {alphabet-style-mapping} {1} {
527   Latin = \l\_l\_uni\_math\_Latin\_style\_tl,
528   latin = \l\_l\_uni\_math\_latin\_style\_tl,
529   Greek = \l\_l\_uni\_math\_Greek\_style\_tl,
530   greek = \l\_l\_uni\_math\_greek\_style\_tl,
531   digit = \l\_l\_uni\_math\_digit\_style\_tl,
532 } {
533   \_l\_l\_uni\_math\_provide\_mathstyle\_id:n { #1 }
534   \_l\_l\_uni\_math\_set\_mathstyle\_mappings:ccccc
535   { c\_l\_uni\_math\_attribute\_sym #1\_int }
536   { c\_l\_uni\_math\_attribute\_sym \l\_l\_uni\_math\_Latin\_style\_tl\_int }
537   { c\_l\_uni\_math\_attribute\_sym \l\_l\_uni\_math\_latin\_style\_tl\_int }
538   { c\_l\_uni\_math\_attribute\_sym \l\_l\_uni\_math\_Greek\_style\_tl\_int }
539   { c\_l\_uni\_math\_attribute\_sym \l\_l\_uni\_math\_greek\_style\_tl\_int }
540   { c\_l\_uni\_math\_attribute\_sym \l\_l\_uni\_math\_digit\_style\_tl\_int }
541 }

```

Finally we define some defaults.

```

542 \DeclareInstance{lua-unicode-math-style}{TeX}{substyles}{
543   normal = TeX,
544   bf = TeX-bf,
545   sf = upright-sf,
546   bfsf = upright-bfsf,
547 }
548 \DeclareInstance{lua-unicode-math-style}{ISO80000-2}{substyles}{
549   normal = ISO80000-2,
550   bf = ISO80000-2-bf,
551   sf = italic-sf,
552   bfsf = italic-bfsf,
553 }
554 \DeclareInstance{lua-unicode-math-style}{french}{substyles}{

```

```

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

```

```

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

```