

The latex-lab-unicode-math code*

L^AT_EX Project

July 11, 2025

Abstract

Contents

1 Introduction 1

2 The Implementation 1

2.1 File declaration 1

2.2 Sockets 1

2.3 Delimiters 2

2.4 varlim-commands 2

2.5 Roots 2

2.6 Fractions 3

Index 4

1 Introduction

This file implements temporary adaptations to the unicode-math package needed for the tagging project.

2 The Implementation

```
1 <@@=math>
2 <*kernel>
```

2.1 File declaration

```
3 \ProvidesExplFile
4 {latex-lab-unicode-math.ltx}
5 {2025-06-30}
6 {0.1e}
7 {unicode-math adaption}
```

*

2.2 Sockets

Unicode glyphs like a root sign should be marked as artifacts to avoid duplication in derivation if mathml structure elements are used. This is done with a luamml socket.

```

8 \str_if_exist:cF { l__socket_tagsupport/math/luamml/artifact_plug_str }
9 {
10   \NewTaggingSocket{math/luamml/artifact}{0}
11 }

```

2.3 Delimiters

Extensible delimiters set with `\bigl`, `\Bigl`, etc. use boxes in their definitions. This gives wrong structure elements if used with luamml. We therefore redefine the internal amsmath command to make use of the luatex primitive.

`\bBigg@`

```

12 \def\bBigg@#1#2
13 {\ensuremath
14   {
15     \Uvextensible height~#1~ \dimexpr0.5\bigr@size\relax ~ depth ~#1~
16     \dimexpr0.5\bigr@size\relax~ axis~exact~#2
17   }
18 }}

```

(End of definition for \bBigg@. This function is documented on page ??.)

2.4 varlim-commands

The commands `\varinjlim`, `\varliminf`, `\varprojlim` and `\varlimsup` use boxes that confuse luamml. We redefine them to use luatex primitives. This slightly changes the look!

```

19 \protected\def\varinjlim
20   {\mathop{\Udelimiterunder 0 "2192 {\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
21 \protected\def\varprojlim
22   {\mathop{\Udelimiterunder 0 "2190 {\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
23 \protected\def\varlimsup
24   {\mathop{\overline{\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
25 \protected\def\varliminf
26   {\mathop{\underline{\qopname\relax o{\lim}}}}

```

2.5 Roots

Roots have two problems in tagging: At first, if mathml structure elements are used, the root symbol is given twice: as Unicode char and through the `\msqrt` or `\mroot` mathml structure element. In derivation this leads to duplications. The glyph should be tagged as artifact in this case. At second, in some cases complicated box constructions instead of the luatex primitives are used which leads to wrong tagging. We redefine `\sqrt` and add the artifact socket for the first problem.

TODO: A root with empty argument should be tagged differently.

```

27 \AtBeginDocument
28 {
29   \cs_gset_protected_nopar:Npn \sqrtsign
30   {
31     \tag_socket_use:n {math/luamml/artifact}
32     \tex_Uradical:D \symoperators "0221A\scan_stop:
33   }
34 }

```

TODO: Tagging of $\sqrt[\leftroot{-2}\uproot{2}\beta]{y}$ is currently incorrect, but setting \Umathradicaldegreerise and \Umathradicaldegreeafter does not work, so another solution must be found (or a warning must be issued).

```

35 \cs_set_nopar:Npn \plainroot@ #1 \of #2
36 {
37   \bool_if:nTF
38   {
39     \__um_int_if_zero_p:n \uproot@ && \__um_int_if_zero_p:n \leftroot@
40   }
41   {
42     \tag_socket_use:n {math/luamml/artifact}
43     \Uroot \c__um_radical_sqrt_tl { #1 } { #2 }
44   }
45   {
46     \hbox_set:Nn \rootbox
47     {
48       \c_math_toggle_token \m@th
49       \scriptscriptstyle { #1 }
50       \c_math_toggle_token
51     }
52     \mathchoice
53     { \r@@t \displaystyle { #2 } }
54     { \r@@t \textstyle { #2 } }
55     { \r@@t \scriptstyle { #2 } }
56     { \r@@t \scriptscriptstyle { #2 } }
57   }
58   \c_group_end_token
59 }

```

2.6 Fractions

Similar to roots in fractions the rule must be marked as artifact.

```

60 \DeclareRobustCommand {\frac}[2]
61 {\tag_socket_use:n{math/luamml/artifact}\Ustack{\begingroup#1\endgroup\@@over#2}}
62 \kernel

```

Index

The italic numbers denote the pages where the corresponding entry is described, numbers underlined point to the definition, all others indicate the places where it is used.

A	
<code>\AtBeginDocument</code>	27
B	
<code>\begingroup</code>	61
<code>\Bigl</code>	<u>2</u>
<code>\bigl</code>	<u>2</u>
bool commands:	
<code>\bool_if:nTF</code>	37
C	
cs commands:	
<code>\cs_gset_protected_nopar:Npn</code>	29
<code>\cs_set_nopar:Npn</code>	35
D	
<code>\DeclareRobustCommand</code>	60
<code>\def</code>	12, 19, 21, 23, <u>25</u>
<code>\dimexpr</code>	15, 16
<code>\displaystyle</code>	53
E	
<code>\endgroup</code>	61
<code>\ensuremath</code>	13
F	
<code>\frac</code>	60
G	
group commands:	
<code>\c_group_end_token</code>	58
H	
hbox commands:	
<code>\hbox_set:Nn</code>	46
L	
luamml commands:	
<code>\luamml_ignore:</code>	20, 22, 24
M	
<code>\mathchoice</code>	52
<code>\mathop</code>	20, 22, 24, 26
<code>\mathstrut</code>	20, 22, 24
N	
<code>\NewTaggingSocket</code>	10
O	
<code>\of</code>	35
<code>\overline</code>	24
P	
<code>\protected</code>	19, 21, 23, 25
<code>\ProvidesExplFile</code>	3
Q	
<code>\qopname</code>	20, 22, 24, 26
R	
<code>\relax</code>	15, 16, 20, 22, 24, 26
<code>\rootbox</code>	46
S	
scan commands:	
<code>\scan_stop:</code>	32
<code>\scriptscriptstyle</code>	49, 56
<code>\scriptstyle</code>	55
<code>\sqrtsign</code>	<u>2</u> , 29
str commands:	
<code>\str_if_exist:NTF</code>	8
<code>\symoperators</code>	32
T	
tag commands:	
<code>\tag_socket_use:n</code>	31, 42, 61
TeX and L ^A T _E X 2 _ε commands:	
<code>\@@over</code>	61
<code>\bBigg@</code>	<u>12</u>
<code>\big@size</code>	15, 16
<code>\leftroot@</code>	39
<code>\m@th</code>	48
<code>\plainroot@</code>	35
<code>\r@@t</code>	53, 54, 55, 56
<code>\uproot@</code>	39
tex commands:	
<code>\tex_Uradical:D</code>	32
<code>\textstyle</code>	54
token commands:	
<code>\c_math_toggle_token</code>	48, 50
U	
<code>\Udelimiterunder</code>	20, 22
um internal commands:	
<code>__um_int_if_zero_p:n</code>	39
<code>\c_um_radical_sqrt_tl</code>	43
<code>\Umathradicaldegreeafter</code>	3
<code>\Umathradicaldegreeerraise</code>	3
<code>\underline</code>	26

<code>\Uroot</code>	43	<code>\varliminf</code>	2, 25
<code>\Ustack</code>	61	<code>\varlimisup</code>	2
<code>\Uvextensible</code>	15	<code>\varlimsup</code>	23
V			
<code>\varinjlim</code>	2, 19	<code>\varprojlim</code>	2, 21