# The `latex-lab-unicode-math` code*

LaTeX Project

November 4, 2025

**Abstract**

## Contents



# 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 adaptions}
```

*

## 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.

```
\str_if_exist:cF { l__socket_tagsupport/math/luamml/artifact_plug_str }
 {
   \NewTaggingSocket{math/luamml/artifact}{0}
 }
```

## 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@`

```
\def\bBigg@#1#2
 {{\ensuremath
    {
     \Uvextensible height~#1~ \dimexpr0.5\big@size\relax ~ depth ~#1~
     \dimexpr0.5\big@size\relax~ axis~exact~#2
    }
 }}
```

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

## 2.4 varlim-commands

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

```
\protected\def\varinjlim
  {\mathop{\Udelimiterunder 0 "2192 {\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
\protected\def\varprojlim
  {\mathop{\Udelimiterunder 0 "2190 {\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
\protected\def\varlimsup
  {\mathop{\overline{\qopname\relax o{\luamml_ignore:\mathstrut lim}}}}
\protected\def\varliminf
  {\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 `\sqrtsign` and add the artifact socket for the first problem.

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

```
\AtBeginDocument
 {
  \cs_gset_protected_nopar:Npn \sqrtsign
    {
      \tag_socket_use:n {math/luamml/artifact}
      \tex_Uradical:D \symoperators "0221A\scan_stop:
    }
 }
```

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

```
\cs_set_nopar:Npn \plainroot@ #1 \of #2
  {
    \bool_if:nTF
      {
        \__um_int_if_zero_p:n \uproot@ && \__um_int_if_zero_p:n \leftroot@
      }
      {
        \tag_socket_use:n {math/luamml/artifact}
        \Uroot \c__um_radical_sqrt_tl { #1 } { #2 }
      }
      {
        \hbox_set:Nn \rootbox
          {
            \c_math_toggle_token \m@th
            \scriptscriptstyle { #1 }
            \c_math_toggle_token
          }
        \mathchoice
          { \r@@t \displaystyle      { #2 } }
          { \r@@t \textstyle         { #2 } }
          { \r@@t \scriptstyle       { #2 } }
          { \r@@t \scriptscriptstyle { #2 } }
      }
     \c_group_end_token
  }
```

## 2.6 Fractions

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

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

⟨/kernel⟩

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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.

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