

The latex-lab-firstaid package

Temporary patches to external packages needed for the tagging project

L^AT_EX Project*

v0.85s 2026-01-19

Abstract

1 Introduction

The followings contains small temporary changes to external packages to avoid errors with the new tagging code.

Similar to the main firstaid package the goal is to remove the patches once the packages have been updated.

2 Implementation

```
1 <*package>
2 <@@=tag>
3 \ProvidesPackage {latex-lab-testphase-firstaid} [%
4   \ltxlabfirstaiddatetime\space v\ltxlabfirstaiddatetime\space
5   Temporary patches to external packages needed for the tagging project]
```

`\FirstAidNeededT` This is a very simple help to ensure that we only apply first aid to an unmodified package or class. It only works in the case the file has already been loaded and the csname `\ver@#1.#2` got defined (holding the current date, version, and short description info). We then compare its content to a frozen string and make the modification `#3` only if both agree. If they differ we assume that the package/class in question got updated by its maintainer.

```
6 \ExplSyntaxOn
7 \providecommand\FirstAidNeededT[3]{
8   \exp_args:Ncx\str_if_eq:onF{ver@#1.#2}{#3}
9   { \typeout{==>~ First~ Aid~ for~ #1.#2~ no~ longer~ applied!^^J
10     \@spaces Expected:^^J
11     \@spaces\@spaces #3^^J
12     \@spaces but~ found:^^J
13     \@spaces\@spaces \use:c{ver@#1.#2}^^J
14     \@spaces so~ I'm~ assuming~ it~ got~ fixed.
15   } }
```

*Initial implementation done by Ulrike Fischer

```

16 \exp_args:Ncx\str_if_eq:ont{ver@#1.#2}{#3}
17 }

```

(End of definition for `\FirstAidNeededT`.)

2.1 tikz/pgf

`tikz` inputs libraries with the primitive `\input` command. This means that these libraries are not listed in the file list written by `\listfiles` and the new tagging status report created with the `check-tagging-status` key.

We therefore redefine one `pgf` command to use the L^AT_EX `\input` command. Check <https://github.com/pgf-tikz/pgf/issues/1424> for changes.

```

18 \AddToHook{package/pgfrcs/after}
19 {\def\pgfutil@InputIfFileExists#1#2#3{\pgfutil@IfFileExists{#1}{\input{#1}\relax#2}{#3}}}

```

2.2 ams classes

The `amsart`, `amsbook` and `amsproc` classes do not use `\@author` to store the author list but a command `\authors`. To be able to nevertheless use the authors in the xmp-metadata we map `\@author` to this new command.

The authors are set with a `trivlist`, this leads to faulty spacing and wrong tagging. This is not yet handled here, but an example how to correct this is in the `test-amsart-title` test.

```

20 \AddToHook{class/amsart/after}
21 {\def\@author{\authors}}
22 \AddToHook{class/amsbook/after}
23 {\def\@author{\authors}}
24 \AddToHook{class/amsproc/after}
25 {\def\@author{\authors}}

```

The classes redefine `\@startsection` and define their own heading commands which are not tagging compatible. The template code will reinstate the new `\@startsection` and so handle the headings using it. But we also need to redefine `\chapter` and `\part`. The following does not try to create exactly the same design, only near enough. This will not properly handle `\specialsection`.

```

26 \cs_new_protected:Npn \__tag_firstaid_amsbook_heading:
27 {
28   \DeclareDocumentCommand \chapter {s = {shorttitle} o m}
29     {\ParseLaTeXeHeading {chapter}{##1} {##2} {##3}}
30   \DeclareInstance{heading}{chapter}{display}
31   {
32     , name          = chapter
33     , level         = 0
34     , placement     = top
35     , after-penalty-sep = 32pt
36     , after-sep     = 22pt
37     , number-format = \MakeUppercase{\chaptername}\enspace \thechapter
38     , decls         = \centering
39     , number-decls  = \normalsize\mdseries
40     , title-decls   = \fontsize{\@xivpt}{18}\bfseries
41     , headformat-instance = chapter
42     , mark-cmd     = \chaptermark{##1}
43     , para-indent  = true

```

```

44     , contents-extra= \addtocontents{lof}{\protect\addvspace{10\p@}}%
45                       \addtocontents{lot}{\protect\addvspace{10\p@}}%
46   }
47   \DeclareInstance{headformat}{chapter}{display}
48   {
49     , indent          = 0pt
50     , before-code     =
51     , after-code      =
52     , number-title-sep = 18pt
53   }
54   \DeclareDocumentCommand \part {s = {shorttitle} o m}
55   { \ParseLaTeXeHeading {part} {##1} {##2} {##3} }
56   \DeclareInstance{heading}{part}{display}
57   {
58     , name             = part
59     , level            = -1
60     , placement        = page
61     , start-code= {\cleardoublepage\thispagestyle{empty}}%
62                  \null\vfil\markboth{}{}}
63     , final-code= \vfil\vfil\newpage\newpage\thispagestyle{empty}
64     , number-format    = \partname\nobreakspace\thepart
65     , decls            = \centering\bfseries
66     , number-decls     = \huge
67     , title-decls      = \Huge
68     , headformat-instance = display
69     , mark-cmd         = \partmark {##1}
70   }
71 }
72 \cs_new_protected:Npn \__tag_firstaid_amsart_heading:
73 {
74   \DeclareInstance{heading}{part-@startsection}{display}
75   {
76     name=part,
77     level=-1,
78     mark-cmd=\partmark {##1},
79     para-indent = true,
80     before-sep = 12.0pt plus 12.0pt,
81     after-penalty-sep = 0pt,
82     after-sep = 6.0pt,
83     decls = \normalfont \bfseries \raggedright,
84     headformat-instance = part-@startsection,
85     number-format = \partname\space\theheading.
86   }
87   \DeclareInstance{headformat}{part-@startsection}{hang}
88   {indent = \z@, number-title-sep = 0.5em}
89 }

```

The redefinitions for amsbook:

```

90 \AddToHook{class/amsbook/after}[latex-lab-testphase-firstaid/amschap]
91 { \__tag_firstaid_amsbook_heading: }

```

amsart and amsproc can use the same definition:

```

92 \AddToHook{class/amsproc/after}[latex-lab-testphase-firstaid/amschap]
93 { \__tag_firstaid_amsart_heading: }
94 \AddToHook{class/amsart/after}[latex-lab-testphase-firstaid/amschap]

```

```
95 {\__tag_firstaid_amsart_heading:}
```

2.3 ams classes and amsthm

The amsart, amsbook and amsproc classes redefine the theorem code and this breaks the tagging added by the block code. The following reenables tagging. It does *not* give a completely identical output (similar to the new theorem code, see <https://github.com/latex3/tagging-project/issues/715>). The code also does not try to use sockets yet, as the theorem definitions in the block code don't do that yet either.

```
96 \AddToHook{class/amsart/after}[latex-lab-testphase-firstaid/abstract]
97 {
98     \__tag_firstaid_ams_abstract:
99 }
100 \AddToHook{class/amsbook/after}[latex-lab-testphase-firstaid/abstract]
101 {
102     \__tag_firstaid_ams_abstract:
103 }

104 \cs_new_protected:Npn \__tag_firstaid_ams_abstract:
105 {
106 \renewenvironment{abstract}{%
107 \ifx\maketitle\relax
108 \ClassWarning{\@classname}{Abstract~ should~ precede~
109 \protect\maketitle\space in~ AMS~ document~ classes;~ reported}%
110 \fi
111 \global\setbox\abstractbox=\vtop \bgroup
112 \normalfont\Small
113 \list{}{\labelwidth\z@
114 \leftmargin3pc \rightmargin\leftmargin
115 \listparindent\normalparindent \itemindent\z@
116 \parsep\z@ \@plus\p@
117 \let\fullwidthdisplay\relax
118 }%
119 \item[\hskip\labelsep\scshape\abstractname.]{%
120 }{%
121 \endlist
122 \par % <--- added
123 \egroup
124 \ifx\@setabstract\relax \@setabstracta \fi
125 }
126 }
127 \ExplSyntaxOff
```

2.4 verse

The verse package has its own definition of the `verse` environment, which would tag correctly, except that it is overwritten by the block code in the hook `begindocument/before`. So the simplest way to make tagging work is to reinstall the package version afterwards, which is what we are doing here.

```
128 \AddToHook{package/verse/after}[latex-lab-firstaid]{%
129 \FirstAidNeededT{verse}{sty}{2014/05/10 v2.4b verse typesetting}%
130 {%
131 \AtBeginDocument{%
```

```

132     \renewenvironment{verse}[1][\linewidth]{%
133         \stepcounter{verse@envctr}%
134         \setcounter{poemline}{0}\refstepcounter{poemline}%
135         \setcounter{vslineno}{1}%
136         \let\=\@vscentercr
137         \list{}{\itemsep \z@
138             \itemindent -\vindent
139             \listparindent\itemindent
140             \parsep \stanzaskip
141             \ifdim #1 < \linewidth
142                 \rightmargin \z@
143                 \setlength{\leftmargin}{\linewidth}%
144                 \addtolength{\leftmargin}{-#1}%
145                 \addtolength{\leftmargin}{-0.5\leftmargin}%
146             \else
147                 \rightmargin \leftmargin
148             \fi
149             \addtolength{\leftmargin}{\vindent}}}%
150         \item[]%
151     }%
152     {\endlist}%
153 }%
154 }%
155 }

```

Of course, this means that the optional argument of the environment then only accepts a length value and not any more a key value list for altering the environment settings.

A more elaborate version could be something like this that allows key/val and legacy interface. Or one could extend the list template to support a `list-width` key.

```

\ExplSyntaxOn
\cs_new_protected:Npn \ExtractAndDropKey #1#2#3#4#5 {
    \tl_set_eq:NN #4 \c_novalue_tl % or empty?
    \keys_define:nn { #1 } { #2 .code:n = \tl_set:Nn #4{##1} }
    \keys_set_known:nnN { #1 } { #3 } #5
}
\ExplSyntaxOff

```

```

% Change the env definition for verse matching verse.sty
% This keeps the verse.sty interface as it is and only adjusts the
% main environment to use the basic list env with the verse.sty
% specific settings.
\makeatletter

```

```

\AddToHook{package/verse/after}{%
    \AtBeginDocument{%
        \RenewDocumentEnvironment{verse}{={verse-width}!0{\linewidth}}{%
            {%
                \stepcounter{verse@envctr}%
                \setcounter{poemline}{0}\refstepcounter{poemline}%
                \setcounter{vslineno}{1}%
                \let\=\@vscentercr
            }%
        }%
    }%
}

```

```

\ExtractAndDropKey{verse}{verse-width}{#1}\@vswidth\@vsremainingkvlist
% If other keys have been specified but not verse-width we have no
% default for \@vswidth and need to set it again
\ExpandArgs{o}\IfNoValueT \@vswidth
    {\def\@vswidth{\linewidth}}}%
%
% This is a bit ugly but we can't stick \cs{@vsremainingkvlist} into
% the instance argument as keys are expected to be visible on
% top-level not hidden inside a macro. The alternative is to push
% in \verb=#1= but then the key/value \verb/verse-width=.../ is
% passed into the instance which is not known there (not harmful as
% it will get ignored but noticeably more and unnecessary
% processing).
%
\def\next##1{%
  \UseInstance{blockenv}{list}%
  {%
    item-indent   = -\vindent,%
    para-indent   = -\vindent,%
    para-vspace   = \stanzaskip,%
    item-skip      = Opt,%
    left-margin   = (\linewidth-\@vswidth)/2+\vindent,%
    right-margin  = \ifdim\@vswidth<\linewidth Opt
                    \else (\linewidth-\@vswidth)/2\fi,%

    ##1%
  }}%
  \ExpandArgs{o}\next\@vsremainingkvlist
  \item\relax
}{\endblockenv}%
}%
}
\makeatother

```

2.5 cleveref

The cleveref package redefines `\@makefnmark` and this means that the patches in the new footnote code fails. We use a hook instead.

```

156 \AddToHook{package/cleveref/after}
157 {
158   \let\@makefnmark\cref@old@makefnmark
159   \AddToHook{cmd/@makefnmark/before}{%
160     \cref@constructprefix{footnote}{\cref@result}%
161     \protected@edef\cref@currentlabel{%
162       [footnote][\arabic{footnote}][\cref@result]%
163     \p@footnote\@thefnmark}}
164 }

```

2.6 booktabs

In some cases booktabs inserts a `\multispan` into the table (through the commands `\@cmidruleb` and `\@cmidrulea` and this then errors with the tagging code. This affects both tabular and longtable (but longtable more as booktabs handles lines in longtable differently). See also issue <https://github.com/latex3/tagging-project/issues/69>

```

165 \ExplSyntaxOn
166 \AddToHook{package/booktabs/after}
167 {
168   \def\@cmidrulea{
169     \multispan\@cmidla
170     &\multispan\@cmidlb
171     \unskip\hskip\cmrkern@l
172   {
173     \tag_mc_begin:n{artifact}
174     \CT@arc@\leaders\hrule \@height\@thisrulewidth\hfill\kern\z@}
175     \hskip\cmrkern@r
176     \tag_mc_end: \int_gdecr:N \g__tbl_row_int
177     \cr}
178
179   \def\@cmidruleb{%
180     \multispan\@cmidlb
181     \unskip\hskip \cmrkern@l%
182   {
183     \tag_mc_begin:n{artifact}
184     \CT@arc@\leaders\hrule \@height\@thisrulewidth\hfill\kern\z@}
185     \hskip\cmrkern@r
186     \tag_mc_end: \int_gdecr:N \g__tbl_row_int
187     \cr}
188   }
189 \ExplSyntaxOff

```

2.7 fancyvrb

The firstaid adds first partial tagging support to the environments of fancyvrb (inline verbatim is untested). This supports then also packages like minted which internally uses fancyvrb and classes like l3doc (where currently the verbatim environment based on fancyvrb is overwritten by the block code). The environments are surrounded by a **verbatim** structure, every line by a **codeline** structure (this requires the block code, but firstaid should be used only with phase-III anyway). Line numbers are tagged as Lbl, inside of the **codeline** structure. The frame lines are marked as artifact.

\FV@LeaveVMode If we are in vmode we have to open a text-unit structure, if we are in hmode we have to set para mode to flattened before the fancyhdr code issues the `\par`. The closing of the text-unit structure is handled by the doendpe code in the block code.

```

190 \ExplSyntaxOn
191 \AddToHook{package/fancyvrb/after}
192 {
193   \def\FV@LeaveVMode{%
194     \if@noskipsec
195       \leavevmode
196     \else
197       \if@FV@ResetMargins\if@inlabel\leavevmode\fi\fi

```

```

198     \fi
199     \ifvmode
200         \@noparlisttrue
201         \__tag_gincr_para_main_begin_int:
202         \tag_struct_begin:n{tag=\l__tag_para_main_tag_tl}
203     \else
204         \bool_set_true:N\l__tag_para_flattened_bool
205         \@noparlistfalse
206         \unskip\par
207     \fi
208 }

```

(End of definition for \FV@LeaveVMode.)

\FV@List At the begin of the list code we have to tag the frame as artifact and start the `verbatim` structure

```

209     \def\FV@List#1{%
210         \begingroup
211         \FV@UseKeyValues
212         \FV@LeaveVMode
213         \if@inlabel\else\setbox\@labels=\box\voidb@x\fi
214         \FV@ListNesting{#1}%
215         \FV@ListParameterHook
216         \FV@ListVSpace
217         \FV@SetLineWidth
218         \FV@InterLinePenalty
219         \let\FV@ProcessLine\FV@ListProcessLine@i
220         \FV@CatCodes
221         \FV@FormattingPrep
222         \FV@ObeyTabsInit
223         \cs_if_exist:NT \FV@BeginListFrame
224         {
225             \tag_mc_begin:n{artifact}
226             \FV@BeginListFrame
227             \tag_mc_end:
228         }
229         \tag_struct_begin:n{tag=verbatim}
230     }

```

(End of definition for \FV@List.)

\FV@EndList At the end of the list code we close the `verbatim` structure and tag the frame as artifact.

```

231     \def\FV@EndList{%
232         \FV@ListProcessLastLine
233         \tag_struct_end:
234         \cs_if_exist:NT \FV@EndListFrame
235         {
236             \tag_mc_begin:n{artifact}
237             \FV@EndListFrame
238             \tag_mc_end:
239         }
240         \@endparenv
241         \endgroup
242         \@endpetrue
243     }

```


(End of definition for \FV@EndList.)

\FV@ListProcessLine At last the tagging of the code lines. Here we have to tag also numbers and frame parts if they exist.

```

244 \def\FV@ListProcessLine#1{%
245     \hbox to \hsize{%
246         \kern\leftmargin
247         \hbox to \linewidth{%
248             \tag_struct_begin:n{tag=codeline}
249             \cs_if_exist:NT \FV@LeftListNumber
250             {
251                 \tag_struct_begin:n{tag=Lbl}
252                 \tag_mc_begin:n{}
253                 \FV@LeftListNumber
254                 \tag_mc_end:
255                 \tag_struct_end:
256             }
257             \cs_if_exist:NT \FV@LeftListFrame
258             {
259                 \tag_mc_begin:n{artifact}
260                 \FV@LeftListFrame
261                 \tag_mc_end:
262             }
263             \tag_mc_begin:n{}%
264             \FancyVerbFormatLine{#1}%
265             \tag_mc_end:
266             \tag_struct_end:\hss
267             \cs_if_exist:NT \FV@RightListFrame
268             {
269                 \tag_mc_begin:n{artifact}
270                 \FV@RightListFrame
271                 \tag_mc_end:
272             }
273             \cs_if_exist:NT \FV@RightListNumber
274             {
275                 \tag_struct_begin:n{tag=Lbl}
276                 \tag_mc_begin:n{}
277                 \FV@RightListNumber
278                 \tag_mc_begin:n{}
279                 \tag_struct_end:
280             }
281             }
282             \hss}}
283     }
284 \ExplSyntaxOff

```

2.8 The microtype package first aid

The microtype package fails in kernel 2025/11 if tagging is active as due to the change to \partokencontext para tagging is triggered and then is unbalanced in an unwanted place. We disable the tagging in this command.

```

285 \AddToHook{package/microtype/after}[firstaid]{%
286     \FirstAidNeededT{microtype}{sty}{2025/07/09 v3.2b

```

```

287   Micro-typographical refinements
288   (RS)}
289   {%
290     \def\MT@get@prot#1#2{%
291       \begingroup
292       \SuspendTagging{\MT@get@prot}%%added by firstaid
293       \setbox\MT@tempbox\vbox{%
294         \everypar{%
295           \parfillskip=\z@skip
296           \hbadness\@M
297           \clubpenalty\z@
298           \widowpenalty\z@
299           \interlinepenalty\z@
300           \@newlistfalse
301           \MT@prot@hook
302           \begingroup
303             \MT@noindent #1\relax\MT@csq@eqgroup
304           \endgroup}%
305       \vbadness=\@M
306       \splittopskip=\z@
307       \vfuzz=\maxdimen
308       \setbox\MT@tempbox\vbox{%
309         \ifvbox\MT@tempbox
310           \global\setbox\MT@tempbox=\vsplit\MT@tempbox to \normalbaselineskip
311         \unvbox\MT@tempbox
312         \global\setbox\MT@tempbox=\lastbox
313       \fi
314     }%
315   \endgroup
316   \ifhbox\MT@tempbox
317     \@tempdima=\@nameuse{#2marginkern}\MT@tempbox\relax
318     \expandafter\ifdim\@tempdima=\z@ \else
319       \leavevmode
320       \MT@vinfo{<< adding #2 margin kern for `#1':\MessageBreak
321         \the\@tempdima \on@line}%
322       \kern\@tempdima
323     \fi
324   \fi
325 }}
326 }

```

(End of definition for \FV@ListProcessLine.)

```

327 \end{package}
328 \end{*latex-lab}
329 \ProvidesFile{firstaid-latex-lab-testphase.ltx}
330   [\lftlabfirstaiddate\space v\lftlabfirstaidversion\space
331     latex-lab wrapper firstaid]
332
333 \RequirePackage{latex-lab-testphase-firstaid}
334
335 \end{*latex-lab}

```