

# The `showlabels` package\*

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1999/07/22

This package introduces no new commands, it just helps you keep track of all the labels by putting the name of the new label into the margin whenever either the `\label` command is used, or an equation is automatically numbered (by replacing the internal `\@eqnnum` command). There are therefore no usage instructions. You invoke this package with the command `\usepackage{showlabels}` in the preamble, and you may give the options `inner` or `outer` (the default) to have the labels placed in the inner or outer margin of the text. If you don't use the `twoside` option, then all pages are 'right-hand' pages, and the 'outer margin' is the right hand one.

The package will also work in the presence of the `twocolumn` option. In this case, the options `inner` and `outer` will be ignored, and the label will be placed in the nearer margin.

In version 1.1, the package was modified to conform to the slightly different mechanism that `amsmath` uses to produce equation numbers. I don't habitually use `amsmath`, so I won't discover any bugs or weaknesses with its support here, and I'd consequently be glad to be informed of any that appear. Do note that the `\usepackage{showlabels}` command must appear *after* the `\usepackage{amsmath}`. Note also that, since these additions appeared, AMS- $\LaTeX$  and the `amstex` package seem to have been declared 'obsolete' in favour of the `amsmath` package. This package now claims conformance with the `amsmath` package alone.

If you want to change the font the labels appear in, use something along the lines of `\renewcommand{\showlabelsfont}{\small\slfamily}`.

For reasonably obvious reasons, this package will not work at all well with the `multicol` package, and for possibly less obvious reasons, it won't work with the `leqno` option either (at some point it should be modified to at least recognise and warn of the conflict in either case, though it's not obvious to me how to do that).

The package might still work with  $\LaTeX$  2.09, but that's neither supported, nor even tested.

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\*This file has version number v1.3c, last revised 1999/07/22, documentation dated 1999/07/22

# 1 History and Credits

For version 1.3, I received comments and bug reports from: David R. Leal Valmana <david@quijote.uc3m.es>, Sungmo Park <smp@dingo.etri.re.kr>, Olivier Michel <Olivier.Michel@lri.fr>, Jiri Vesely <jvesely@karlin.mff.cuni.cz>, Patrick Sibille <sibille@amoco.saclay cea.fr>, Hagen Kleinert <kleinert@physik.fu-berlin.de>, Francis M. C. Ching <fmcching@kingcong.uwaterloo.ca>, Michael Friendly <friendly@hotspur.psych.yorku.ca>. Many thanks to all.

Back in 29-Jan-92, Darrel Hankerson <hank@ducvax.auburn.edu>, made the update to NFSS, and changed the name to ‘showlabel.sty’.

Originally released 21-Sep-91 by me, under the name labels.sty.

# 2 Implementation

```
1 (*package)
```

Before we do anything else, find out if we’re using AMS- $\LaTeX$ . . . . Note that, since these additions appeared, AMS- $\LaTeX$  and the `amstex` package seem to have been declared ‘obsolete’. This package now claims conformance with the `amsmath` package.

```
2 \newif\ifSL@AMS
3 \expandafter\ifx\csname maketag@@@\endcsname\relax
4   \SL@AMSfalse
5 \else
6   \SL@AMStrue
7   \typeout{with AMS-LaTeX equation tags}
8 \fi
```

`\@eqnnum` This replacement for `\@eqnnum` will produce a note, sticking into the margin beside the equation number, showing the equation’s label. `\SL@labeln@me` is initialised to `\relax`, redefined within the `\label` macro, and reset to `\relax` here. If it’s already equal to `\relax` here, the equation number hasn’t been labelled, and so ‘???’ is put in the margin. Don’t do this for the AMS- $\LaTeX$  case as it artfully incorporates the `\maketag@@@` mechanism into a redefined `\@eqnnum`.

```
9 \ifSL@AMS
```

AMS- $\LaTeX$  uses `\maketag@@@`, to form tags in equations. All we have to do is hook into the `\maketag@@@` macro, and use `\df@label`, which is pre-defined with the current label name.

```
10 \let\@maketag@@@=\maketag@@@
11 \def\maketag@@@#1{\@maketag@@@{#1}%
12 \ifx\df@label\empty
13 %   \SL@eqnlrtext{???}%
14 \else
15   \SL@eqnlrtext{\df@label}%
16 \fi}
17 \else
```

The ‘normal’ case, without AMS-LaTeX

```
18 \let\@eqnnum=\@eqnnum
19 \def\@eqnnum{\@eqnnum
20 \expandafter\ifx\SL@labeln@me\relax
```

```

21 \SL@eqnlrtext{???}%
22 \else
23 \SL@eqnlrtext{\SL@labeln@me}%
24 \global\def\SL@labeln@me{\relax}%
25 \fi}

```

And initialise the value of `\labeln@me` to `\relax`, so that `\@eqnnum` starts off behaving the right way.

```

26 \global\def\SL@labeln@me{\relax}
27 \fi

```

Labels are printed with the font specified by `\showlabelfont`, which can be overridden within the document:

```

28 \def\showlabelfont{\small\tt}

```

Leave this as `\small\tt`, to avoid a pointless incompatibility with L<sup>A</sup>T<sub>E</sub>X2.09.

For the benefit of `\prlabelname`, define `\SL@gobblethree` to do nothing other than eat three tokens.

```

29 \def\SL@gobblethree#1#2#3{}

```

`\prlabelname` Expansion is label name with all catcodes ‘other’ (Appendix D trickery abounds!). Use `\r@#1`, rather than just `\#1` to avoid defining any new control sequences.

```

30 \def\prlabelname#1{%
31 \expandafter\expandafter\expandafter\SL@gobblethree
32 \expandafter\string\csname r@#1\endcsname}

```

`\@makecaption` Simple replacement for the `\@makecaption` command. This simply issues the original `\@makecaption` command after redefining `\label`. This does not put the label name in the margin (that’s too complicated for the moment), but instead inserts it as part of the caption.

```

33 \let\SL@makecaption\@makecaption
34 \long\def\@makecaption#1#2{{\def\label##1{{\showlabelfont
35 \{\prlabelname{##1}\}\space}\SL@label{##1}}}%

```

...and follows it with the original, saved, `\@makecaption`.

```

36 \SL@makecaption{#1}{#2}}

```

`\label` This is the central bit of this package. Depending on the mode, put the current label name in the margin in one of a variety of ways. First of all, issue the saved `\SL@label` command.

```

37 \let\SL@label\label
38 \def\label#1{\@bsphack\SL@label{#1}%

```

In maths mode, produce a label name alongside the equation number. If we’re not using AMS-L<sup>A</sup>T<sub>E</sub>X, then save the label name in `\SL@labelname`. If we *are* using AMS-L<sup>A</sup>T<sub>E</sub>X, then we don’t have to worry, because it’s saved in `\df@label` for us.

```

39 \ifmode
40 \ifSL@AMS\else
41 \xdef\SL@labeln@me{\prlabelname{#1}}%
42 \fi

```

Otherwise, create a box with zero height and depth, and the same width as the page. Put all this in braces, to contain the setting of `\box0` (which probably shouldn’t be necessary).

```

43 \else
44   {\setbox0=\vbox to 0pt{\vss
45     \hbox to \columnwidth{\SL@lrtext{#1}}}%
46     \dp0=0pt

```

and attach it below the last one, using `\nointerlineskip` if we're in vertical mode, or `\vadjust` otherwise.

```

47 \ifvmode
48   \nointerlineskip\box0\nobreak
49 \else
50   \vadjust{\box0\nobreak}%
51 \fi}%

```

That's it. Finish off the `\ifmmode` and give the partner to `\@bsphack`.

```

52 \fi
53 \@esphack}

```

`\margintext` Set the actual text of the label. Use `\prlabelname` here: without this, a label command given outside of an equation or a `\caption` will appear wrongly if the label has things like underscores within it.

```

54 \def\SL@margintext#1{\showlabelfont{\prlabelname{#1}\}}

```

But where is the marginal text actually set? It can be in the left margin, the right one, or can alternate. `\SL@lrtext`, used in the `\vbox` above, is set, under the control of `\if@outerlabels` below, to one of `\SL@lefttext`, `\SL@righttext` or `\SL@alternatetext`.

```

\SL@righttext
\SL@lefttext

```

```

55 \def\SL@righttext#1{\hfill\rlap{\quad\SL@margintext{#1}}}
56 \def\SL@lefttext #1{\llap{\SL@margintext{#1}\quad}\hfill}

```

The code for `\SL@alternatetext` doesn't work perfectly, as it sometimes manages to get things on the wrong side of the text near the top of a new page. This is a venial slip, however, as this package should never be used in a final version.

```

\SL@alternatetext

```

```

57 \def\SL@alternatetext{%
58   \if@outerlabels
59     \ifodd\c@page
60       \let\SL@next\SL@righttext\else
61       \let\SL@next\SL@lefttext\fi
62   \else
63     \ifodd\c@page
64       \let\SL@next\SL@lefttext\else
65       \let\SL@next\SL@righttext\fi
66   \fi
67   \SL@next}

```

The case where the `twocolumn` option is set is slightly different. There we have to switch between placing the note in the left and right margins, depending on whether we're setting the first or second column. This macro, and `\SL@eqn-twocoltext` below, uses the switch `\if@firstcolumn` to decide whether it's in the first or the second column of the text (I suppose it'll get terribly confused if we use `multicol.sty` along with this). This is defined and maintained in

the base file `ltoutput.dtx`. It's not part of the defined interface, however (there doesn't seem to be one, grump), so I don't suppose we should really rely on it. There isn't an option, however.

`\SL@twocoltext`

```
68 \def\SL@twocoltext{%
69   \if@firstcolumn
70     \let\SL@next\SL@lefttext
71   \else
72     \let\SL@next\SL@righttext
73   \fi
74   \SL@next}
```

We have very similar things for equations, except that they are set in place, rather than within a zero depth box. This code ASSUMES that equation numbers are going to be on the right hand side of the page. It should probably check for the existence of the `leqno` option (how?).

`\SL@eqnrighttext`

`\SL@eqnlefttext`

```
75 \def\SL@eqnrighttext#1{\rlap{\quad\SL@margintext{#1}}}
76 \def\SL@eqnlefttext #1{\hbox to 0pt{\kern -\columnwidth
77 \llap{\SL@margintext{#1}\quad}\hss}}
```

Now do the analogues for the equation numbers, in the case of the alternate page selection...

`\SL@eqnalternatetext`

```
78 \def\SL@eqnalternatetext{%
79   \if@outerlabels
80     \ifodd\c@page
81       \let\SL@next\SL@eqnrighttext\else
82       \let\SL@next\SL@eqnlefttext\fi
83   \else
84     \ifodd\c@page
85       \let\SL@next\SL@eqnlefttext\else
86       \let\SL@next\SL@eqnrighttext\fi
87   \fi
88   \SL@next}
```

...and the twocolumn option

`\SL@eqntwocoltext`

```
89 \def\SL@eqntwocoltext{%
90   \if@firstcolumn
91     \let\SL@next\SL@eqnlefttext
92   \else
93     \let\SL@next\SL@eqnrighttext
94   \fi
95   \SL@next}
```

To keep track of things, declare the `\if@outerlabels` switch, and set it true by default.

```
96 \newif\if@outerlabels
97 \@outerlabelstrue
```

We select between the various possibilities using the `outer` and `inner` options and, implicitly, the `twoside` option.

```
98 \DeclareOption{outer}{\@outerlabelstrue}
99 \DeclareOption{inner}{\@outerlabelfalse}
```

Process any options that have been set.

```
100 \ProcessOptions
```

and use the values of `\if@outerlabels` and `if@twoside` which may have been set by those options, to set `\SL@lrtext` to be the appropriate control sequence. The presence of the `twocolumn` option means that we ignore the `inner` and `outer` options.

```
101 \if@twocolumn
102   \let\SL@lrtext\SL@twocoltext
103   \let\SL@eqnlrtext\SL@eqntwocoltext
104 \else
105   \if@outerlabels
106     \if@twoside
107       \let\SL@lrtext\SL@alternatetext
108       \let\SL@eqnlrtext\SL@eqnalternatetext
109     \else
110       \let\SL@lrtext\SL@righttext
111       \let\SL@eqnlrtext\SL@eqnrighttext
112     \fi
113   \else
114     \if@twoside
115       \let\SL@lrtext\SL@alternatetext
116       \let\SL@eqnlrtext\SL@eqnalternatetext
117     \else
118       \let\SL@lrtext\SL@lefttext
119       \let\SL@eqnlrtext\SL@eqnlefttext
120     \fi
121   \fi
122 \fi
```

That's us.

```
123 \endpackage
```