The \texttt{mleftright} package

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Abstract

\LaTeX{} sets subformulas by \texttt{\left} and \texttt{\right} as inner formulas with additional surrounding spaces in some situations. This package provides \texttt{\mleft} and \texttt{\mright} that call \texttt{\left} and \texttt{\right}, but the delimiters will act as normal \texttt{\mathopen} and \texttt{\mathclose} delimiters without the additional space of an inner formula.

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1 Documentation

The package is a result of a thread in the newsgroup \texttt{comp.text.tex} with the subject \textit{spacing after \texttt{\right}} and \textit{before \texttt{\left}} [1]. The problem: \texttt{\left} and \texttt{\right} adjust the size of the delimiters automatically. However, \LaTeX{} treats the whole expression as inner formula. In some circumstances \LaTeX{} adds extra space before or after an inner formula. Example:

\begin{verbatim}
\[ \int_{0}^{\infty} e^{-x} \, dx \]
\end{verbatim}

*Please report any issues at https://github.com/ho-tex/mleftright/issues
$\sin(x^2), x$ \Rightarrow \sin(x^2), x

$\sin\left(x^2\right), x$ \Rightarrow \sin\left(x^2\right), x

$\sin\mleft(x^2\mright), x$ \Rightarrow \sin\mleft(x^2\mright), x

(\mleft and \mright are provided by this package.)

In the newsgroup Donald Arseneau answered with clever macros [2]:

\begin{verbatim}
\newcommand\lft{\mathopen{}\left}
\newcommand\rgt{\aftergroup\mathclose\aftergroup{\aftergroup}\right}
\end{verbatim}

However one problem remains, a following subscript or superscript is not applied
to the right delimiter but the empty \mathclose. Thus Philipp Stephani provided
an improvement [3]:

\begin{verbatim}
\mathopen{} \mathclose{\left\| A^2 \right\|}_2
\end{verbatim}

Heiko Oberdiek converted this into macro form [4]:

\begin{verbatim}
\newcommand\lft{\mathopen{}\mathclose\bgroup\left}
\newcommand\rgt{\aftergroup\egroup\right}
\end{verbatim}

The package uses longer macro names \mleft and \mright to avoid name clashes. Also it adds some checks for error conditions.

1.1 Use

\mleft(delimL) \ldots \mright(delimR)

Macros \mleft and \mright are used in the same way as \left and \right. Also
\middle can be used inbetween if \varepsilon-\TeX is present.

\mleftright

Macro \mleftright redefines \left as \mleft and \right as \mright. The
redefinition is local to the group.

\mleftrightrestore

Macro \mleftright restores \left and \right with the original meaning if they
were previously redefined by \mleftright (also locally).

2 Implementation

1 (*package)

Reload check, especially if the package is not used with \LaTeX.

2 \begin{verbatim}
\begingroup\catcode61\catcode48\catcode32=10\relax%
\end{verbatim}

3 \texttt{\catcode13=5 \^`M}

4 \texttt{\endlinechar=13 \%

5 \texttt{\catcode35=6 \^`#}

6 \texttt{\catcode39=12 \'}

7 \texttt{\catcode44=12 \,}

8 \texttt{\catcode45=12 \-}

9 \texttt{\catcode46=12 \.}

10 \texttt{\catcode58=12 \:}

11 \texttt{\catcode64=11 \%}
\catcode123=1 % { 
\catcode125=2 % }
\expandafter\let\expandafter\x\csname ver@mleftright.sty\endcsname
\ifx\x\relax % plain-Tex, first loading
else
\expandafter\ifx\csname PackageInfo\endcsname\relax
\def\x#1#2{ 
\immediate\write1{-}{Package #1 Info: #2.}%
}\else
\def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
\fi
\x{mleftright}{The package is already loaded}%
\aftergroup\endinput
\fi
\fi
\endgroup%
Package identification:
\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^M
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % '
\catcode40=12 % ( 
\catcode41=12 % )
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode47=12 % /
\catcode58=12 % :
\catcode64=11 % @
\catcode91=12 % [ 
\catcode93=12 % ]
\catcode123=1 % {
\catcode125=2 % }
\expandafter\ifx\csname ProvidesPackage\endcsname\relax
\def\x#1#2[#3][#4]{\endgroup
\immediate\write1{-}{Package: #3 #4}%
\xdef\#1[#4]{%
}\else
\def\x#1#2[#3]{\endgroup
\ifx#1\@undefined
\xdef#1{#3}%
\fi
\ifx#1\relax
\xdef#1{#3}%
\fi
}\fi
\expandafter\ifx\csname ver@mleftright.sty\endcsname
\ProvidesPackage{mleftright}%
[2019/12/03 v1.2 Math left/right delim. as open/close (HO)]%
}
The original commands \texttt{\textbackslash left} and \texttt{\textbackslash right} are saved and later used in \texttt{\mleft} and \texttt{\mright} in order to deal with:
\begin{verbatim}
\let\left\modeleft
\let\right\mright
\end{verbatim}

\texttt{\mleftright@OrgLeft}  
\texttt{\mleftright@OrgRight}  
\texttt{\mleftright@Def}  

Macro \texttt{\mleftright@Def} defines a macro as robust macro if \texttt{\textasciitilde\TeX} or \texttt{\LaTeX} is available.
\begin{verbatim}
ltx@IfUndefined{protected}{%  
def\mleftright@Def{%  
\edef\mleftright@Def#1{%  \noexpand\ltx@IfUndefined{  \noexpand\expandafter\noexpand\ltx@gobble\noexpand\string#1%  \expandafter\noexpand\mleftright@Def#1%  \noexpand\@PackageError{mleftright}{Command \noexpand\string#1 already defined}%  \noexpand\@ehd  \noexpand\ltx@gobble  \}%  
\}%  
\edef\mleftright@Def#1{%  \noexpand\ltx@IfUndefined{%  \noexpand\expandafter\noexpand\ltx@gobble\noexpand\string#1%  \expandafter\noexpand\mleftright@Def#1%  \}%  
\def\mleftright@WrongGroup#1(#2){%  \ifnum\mleftright@GroupLevel<\ltx@zero  \@PackageError{mleftright}{Missing previous \string\mleft}\@ehc  \else  \@PackageError{mleftright}{Unexpected group status for \string\mright}\@ehc  \}}%  
\\def\mleftright@GroupLevel{-1}%
\def\mleftright@WrongGroup{\textbackslash mleft\textbackslash mright}%
\end{verbatim}

In case of \texttt{\textasciitilde\TeX} the group status after the left symbol is saved and later checked at the beginning of \texttt{\mright}.
\begin{verbatim}
ltx@IfUndefined{currentgrouplevel}{%  \catcode38=14 \csname ltx@ifundefined{currentgrouplevel}  \catcode38=9 \end{verbatim}

\texttt{\mleftright@WrongGroup}
\else
\MessageBreak
Group level is #1, %
expected is \mleftright@GroupLevel
\fi
\ifnum16=#2 %
\else
\MessageBreak
Group type is #2 (%
\ifcase#2 %
bottom level%
\or simple%
\or hbox%
\or adjusted hbox%
\or vbox%
\or vtop%
\or align%
\or no align%
\or output%
\or math%
\or disc%
\or insert%
\or vcenter%
\or math choice%
\or semi simple%
\or math shift%
\or math left%
\else
unknown%
\fi
\space group),\MessageBreak
expected is 16 (math left group)%
\fi
}\@ehd
\fi
\mleft
\mleftright@Def\mleft{%
\mathopen{}}\mathclose\bgroup
\edef\mleftright@GroupLevel{\the\numexpr\the\currentgrouplevel+1}%
\mleftright@OrgLeft
\mleftright@Def\mright{%
\ifnum\mleftright@GroupLevel=\currentgrouplevel\aftergroup\egroup
\ifnum16=\currentgrouptype\aftergroup\egroup
\else
\expandafter\mleftright@WrongGroup
\the\expandafter\currentgrouplevel
\expandafter\aftergroup\egroup
\expandafter\aftergroup\egroup
\fi
\else
\expandafter\mleftright@WrongGroup
\expandafter\aftergroup\egroup
\fi
\mright
3 Installation

3.1 Download

Package. This package is available on CTAN:\(^1\):


Bundle. All the packages of the bundle ‘mleftright’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

CTAN:install/macros/latex/contrib/mleftright.tds.zip

TDS refers to the standard “A Directory Structure for \TeX\ Files” (CTAN:pkg/tds). Directories with \texttt{texmf} in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the \texttt{mleftright.tds.zip} in the TDS tree (also known as \texttt{texmf} tree) of your choice. Example (linux):

```
unzip mleftright.tds.zip -d ~/texmf
```

3.3 Package installation

Unpacking. The \texttt{.dtx} file is a self-extracting docstrip archive. The files are extracted by running the \texttt{.dtx} through plain \TeX:\(^1\)

```
tex mleftright.dtx
```

\(^1\)CTAN:pkg/mleftright
TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
mleftright.sty → tex/generic/mleftright/mleftright.sty
mleftright.pdf → doc/latex/mleftright/mleftright.pdf
mleftright.dtx → source/latex/mleftright/mleftright.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

### 3.4 Refresh file name databases

If your \TeX{} distribution (\TeX{} Live, \miktex{}, ...) relies on file name databases, you must refresh these. For example, \TeX{} Live users run `texhash` or `mktexlsr`.

### 3.5 Some details for the interested

**Unpacking with \LaTeX{}**. The `.dtx` chooses its action depending on the format:

- **plain \TeX{}**: Run `docstrip` and extract the files.
- **\LaTeX{}**: Generate the documentation.

If you insist on using \LaTeX{} for `docstrip` (really, `docstrip` does not need \LaTeX{}), then inform the autodetect routine about your intention:

```
\latex \let\install=y\input{mleftright.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf\LaTeX{}`:

```
pdflatex mleftright.dtx
makeindex -s gind.ist mleftright.idx
pdflatex mleftright.dtx
makeindex -s gind.ist mleftright.idx
pdflatex mleftright.dtx
```

### 4 Acknowledgement

**Donald Arsenau**: He provided the main trick and the first macros.

**Philipp Stephani**: He solved the subscript problem.
5 References

[1] Dave94705, *spacing after \right) and before \left)*, newsgroup comp.text.tex, Message-ID: 5d264909-7c3d-4c9d-9b22-434178b2bf90@e21g2000prn.googlegroups.com, 2010-08-12. https://groups.google.com/group/comp.text.tex/msg/e5b6833da7dc29bf

[2] Donald Arseneau, *Re: spacing after \right) and before \left)*, newsgroup comp.text.tex, Message-ID: yfivd6sv18y.fsf@mutant.triumf.ca, 2010-08-30. https://groups.google.com/group/comp.text.tex/msg/e0b2e4386e5d04e4

[3] Philipp Stephani, *Re: spacing after \right) and before \left)*, newsgroup comp.text.tex, Message-ID: 4c8c8c1e$0$6981$9b4e6d93@newsspool4.arcor-online.net, 2010-09-12. https://groups.google.com/group/comp.text.tex/msg/87ac1f61321de3ef

[4] Heiko Oberdiek, *Re: spacing after \right) and before \left)*, newsgroup comp.text.tex, Message-ID: i6jcc28o8l$1@news.eternal-september.org, 2010-09-12. https://groups.google.com/group/comp.text.tex/msg/257aa6119bef878b

6 History

[2010/09/25 v1.0]
• The first version.

[2016/05/16 v1.1]
• Documentation updates.

[2019/12/03 v1.2]
• Documentation updates.

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