The mleftright package

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Abstract

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

Contents

1 Documentation

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

*Please report any issues at https://github.com/ho-tex/mleftright/issues

`$\sin(x^2), x$` ⇒ $\sin(x^2), x$
`$\sin\left(x^2\right), x$` ⇒ $\sin\left(x^2\right), x$
`$\sin\mleft(x^2\mright), x$` ⇒ $\sin\mleft(x^2\mright), x$
(`\mleft` and `\mright` are provided by this package.)

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

```
\newcommand\lft{\mathopen{}\left}
\newcommand\rgt{\aftergroup\mathclose\aftergroup{\aftergroup}\right}
```

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]:

```
\mathopen{} \mathclose{\left\| A^2 \right\|}_2
```

Heiko Oberdiek converted this into macro form [4]:

```
\newcommand\lft{\mathopen{}\mathclose\bgroup\left}
\newcommand\rgt{\aftergroup\egroup\right}
```

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*⟩ ... `\mright`⟨*delimR*⟩

Macros `\mleft` and `\mright` are used in the same way as `\left` and `\right`. Also `\middle` can be used inbetween if ε-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 \begingroup\catcode61\catcode48\catcode32=10\relax%
3   \catcode13=5 % ^^M
4   \endlinechar=13 %
5   \catcode35=6 % #
6   \catcode39=12 % '
7   \catcode44=12 % ,
8   \catcode45=12 % -
9   \catcode46=12 % .
10  \catcode58=12 % :
11  \catcode64=11 % @
```

```
  \catcode123=1 % {
  \catcode125=2 % }
  \expandafter\let\expandafter\x\csname ver@mleftright.sty\endcsname
  \ifx\x\relax % plain-TeX, first loading
  \else
    \def\empty{}%
    \ifx\x\empty % LaTeX, first loading,
      % variable is initialized, but \ProvidesPackage not yet seen
    \else
      \expandafter\ifx\csname PackageInfo\endcsname\relax
        \def\x#1#2{%
          \immediate\write-1{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\write-1{Package: #3 #4}%
      \xdef#1{#4}%
    }%
  \else
    \def\x#1#2[#3]{\endgroup
      #2[{#3}]%
      \ifx#1\@undefined
        \xdef#1{#3}%
      \fi
      \ifx#1\relax
        \xdef#1{#3}%
      \fi
    }%
  \fi
\expandafter\x\csname ver@mleftright.sty\endcsname
\ProvidesPackage{mleftright}%
  [2019/12/03 v1.2 Math left/right delim. as open/close (HO)]%
```

```
\begingroup\catcode61\catcode48\catcode32=10\relax%
  \catcode13=5 % ^^M
  \endlinechar=13 %
  \catcode123=1 % {
  \catcode125=2 % }
  \catcode64=11 % @
  \def\x{\endgroup
    \expandafter\edef\csname mleftright@AtEnd\endcsname{%
      \endlinechar=\the\endlinechar\relax
      \catcode13=\the\catcode13\relax
      \catcode32=\the\catcode32\relax
      \catcode35=\the\catcode35\relax
      \catcode61=\the\catcode61\relax
      \catcode64=\the\catcode64\relax
      \catcode123=\the\catcode123\relax
      \catcode125=\the\catcode125\relax
    }%
  }%
\x\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\def\TMP@EnsureCode#1#2{%
  \edef\mleftright@AtEnd{%
    \mleftright@AtEnd
    \catcode#1=\the\catcode#1\relax
  }%
  \catcode#1=#2\relax
}
\TMP@EnsureCode{38}{4}% &
\TMP@EnsureCode{39}{12}% '
\TMP@EnsureCode{40}{12}% (
\TMP@EnsureCode{41}{12}% )
\TMP@EnsureCode{42}{12}% *
\TMP@EnsureCode{43}{12}% +
\TMP@EnsureCode{44}{12}% ,
\TMP@EnsureCode{45}{12}% -
\TMP@EnsureCode{46}{12}% .
\TMP@EnsureCode{47}{12}% /
\TMP@EnsureCode{60}{12}% <
\TMP@EnsureCode{91}{12}% [
\TMP@EnsureCode{93}{12}% ]
\edef\mleftright@AtEnd{%
  \mleftright@AtEnd
  \escapechar\the\escapechar\relax
  \noexpand\endinput
}
\escapechar=92 %
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
  \input infwarerr.sty\relax
  \input ltxcmds.sty\relax
\else
  \RequirePackage{infwarerr}[2010/04/08]%
  \RequirePackage{ltxcmds}[2010/04/26]%
```

```
\fi
```

The original commands `\left` and `\right` are saved and later used in `\mleft` and `\mright` in order to deal with:

```
\let\left\mleft
\let\right\mright
```

`\mleftright@OrgLeft`

```
\let\mleftright@OrgLeft\left
```

`\mleftright@OrgRight`

```
\let\mleftright@OrgRight\right
```

`\mleftright@Def` Macro `\mleftright@Def` defines a macro as robust macro if ε-TEX or LATEX is available.

```
\ltx@IfUndefined{protected}{%
  \ltx@IfUndefined{DeclareRobustCommand}{%
    \def\mleftright@Def{\def}%
  }{%
    \def\mleftright@Def{\DeclareRobustCommand*}%
  }%
}{%
  \def\mleftright@Def{\protected\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
  }%
}
```

In case of ε-TEX the group status after the left symbol is saved and later checked at the beginning of `\mright`.

```
\ltx@IfUndefined{currentgrouplevel}{%
  \catcode38=14 % & = comment
}{%
  \catcode38=9 % & = ignore
}
```

`\mleftright@GroupLevel`

```
& \def\mleftright@GroupLevel{-1}%
```

`\mleftright@WrongGroup`

```
& \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%
&       \ifnum\mleftright@GroupLevel=#1 %
```

```
166 &       \else
167 &         .\MessageBreak
168 &         Group level is #1, %
169 &           expected is \mleftright@GroupLevel
170 &       \fi
171 &       \ifnum16=#2 %
172 &       \else
173 &         .\MessageBreak
174 &         Group type is #2 (%
175 &         \ifcase#2 %
176 &           bottom level%
177 &           \expandafter\expandafter\expandafter\ltx@gobblefour
178 &           \expandafter\ltx@gobbletwo
179 &         \or simple%
180 &         \or hbox%
181 &         \or adjusted hbox%
182 &         \or vbox%
183 &         \or vtop%
184 &         \or align%
185 &         \or no align%
186 &         \or output%
187 &         \or math%
188 &         \or disc%
189 &         \or insert%
190 &         \or vcenter%
191 &         \or math choice%
192 &         \or semi simple%
193 &         \or math shift%
194 &         \or math left%
195 &         \else
196 &           unknown%
197 &         \fi
198 &         \space group),\MessageBreak
199 &         expected is 16 (math left group)%
200 &       \fi
201 &     }\@ehd
202 &   \fi
203 & }%
```

\mleft

```
204 \mleftright@Def\mleft{%
205   \mathopen{}\mathclose\bgroup
206 & \edef\mleftright@GroupLevel{\the\numexpr\the\currentgrouplevel+1}%
207   \mleftright@OrgLeft
208 }
```

\mright

```
209 \mleftright@Def\mright{%
210 & \ifnum\mleftright@GroupLevel=\currentgrouplevel
211 &   \ifnum16=\currentgrouptype
212       \aftergroup\egroup
213 &   \else
214 &     \expandafter\mleftright@WrongGroup
215 &     \the\expandafter\currentgrouplevel
216 &     \expandafter(\the\currentgrouptype)%
217 &   \fi
218 & \else
219 &   \expandafter\mleftright@WrongGroup
```

```
220 &   \the\expandafter\currentgrouplevel
221 &   \expandafter(\the\currentgrouptype)%
222 & \fi
223   \mleftright@OrgRight
224 }
```

\mleftright

```
225 \mleftright@Def\mleftright{%
226   \let\left\mleft
227   \let\right\mright
228 }
```

\mleftrightrestore

```
229 \mleftright@Def\mleftrightrestore{%
230   \ifx\left\mleft
231     \let\left\mleftright@OrgLeft
232   \fi
233   \ifx\right\mright
234     \let\right\mleftright@OrgRight
235   \fi
236 }

237 \mleftright@AtEnd%
238 ⟨/package⟩
```

3 Installation

3.1 Download

Package. This package is available on CTAN[1]:

CTAN:macros/latex/contrib/mleftright/mleftright.dtx The source file.

CTAN:macros/latex/contrib/mleftright/mleftright.pdf Documentation.

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 `texmf` in their name are usually organized this way.

3.2 Bundle installation

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

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

3.3 Package installation

Unpacking. The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain TEX:

```
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 pdfLATEX:

```
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@g21g2000prn.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: `yfivd6svl8y.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: `i6jcc2$8of$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.

7 Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.