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/oberdiek/issues

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

```
$\sin(x^2), x$
```
            $\Rightarrow$ $\sin(x^2), x$

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

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

(\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 % @
12   \catcode123=1 % {
13   \catcode125=2 % }
14   \expandafter\let\expandafter\x\csname ver@mleftright.sty\endcsname
15   \ifx\x\relax % plain-TeX, first loading

```
16  \else
17    \def\empty{}%
18    \ifx\x\empty % LaTeX, first loading,
19      % variable is initialized, but \ProvidesPackage not yet seen
20    \else
21      \expandafter\ifx\csname PackageInfo\endcsname\relax
22        \def\x#1#2{%
23          \immediate\write-1{Package #1 Info: #2.}%
24        }%
25      \else
26        \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
27      \fi
28      \x{mleftright}{The package is already loaded}%
29      \aftergroup\endinput
30    \fi
31  \fi
32  \endgroup%
```

Package identification:

```
33  \begingroup\catcode61\catcode48\catcode32=10\relax%
34    \catcode13=5 % ^^M
35    \endlinechar=13 %
36    \catcode35=6 % #
37    \catcode39=12 % '
38    \catcode40=12 % (
39    \catcode41=12 % )
40    \catcode44=12 % ,
41    \catcode45=12 % -
42    \catcode46=12 % .
43    \catcode47=12 % /
44    \catcode58=12 % :
45    \catcode64=11 % @
46    \catcode91=12 % [
47    \catcode93=12 % ]
48    \catcode123=1 % {
49    \catcode125=2 % }
50    \expandafter\ifx\csname ProvidesPackage\endcsname\relax
51      \def\x#1#2#3[#4]{\endgroup
52        \immediate\write-1{Package: #3 #4}%
53        \xdef#1{#4}%
54      }%
55    \else
56      \def\x#1#2[#3]{\endgroup
57        #2[{#3}]%
58        \ifx#1\@undefined
59          \xdef#1{#3}%
60        \fi
61        \ifx#1\relax
62          \xdef#1{#3}%
63        \fi
64      }%
65    \fi
66  \expandafter\x\csname ver@mleftright.sty\endcsname
67  \ProvidesPackage{mleftright}%
68    [2016/05/16 v1.1 Math left/right delim. as open/close (HO)]%
69  \begingroup\catcode61\catcode48\catcode32=10\relax%
70    \catcode13=5 % ^^M
71    \endlinechar=13 %
72    \catcode123=1 % {
73    \catcode125=2 % }
74    \catcode64=11 % @
75    \def\x{\endgroup
76      \expandafter\edef\csname mleftright@AtEnd\endcsname{%
```

```
77    \endlinechar=\the\endlinechar\relax
78    \catcode13=\the\catcode13\relax
79    \catcode32=\the\catcode32\relax
80    \catcode35=\the\catcode35\relax
81    \catcode61=\the\catcode61\relax
82    \catcode64=\the\catcode64\relax
83    \catcode123=\the\catcode123\relax
84    \catcode125=\the\catcode125\relax
85   }%
86  }%
87 \x\catcode61\catcode48\catcode32=10\relax%
88 \catcode13=5 % ^^M
89 \endlinechar=13 %
90 \catcode35=6 % #
91 \catcode64=11 % @
92 \catcode123=1 % {
93 \catcode125=2 % }
94 \def\TMP@EnsureCode#1#2{%
95   \edef\mleftright@AtEnd{%
96     \mleftright@AtEnd
97     \catcode#1=\the\catcode#1\relax
98   }%
99   \catcode#1=#2\relax
100 }
101 \TMP@EnsureCode{38}{4}% &
102 \TMP@EnsureCode{39}{12}% '
103 \TMP@EnsureCode{40}{12}% (
104 \TMP@EnsureCode{41}{12}% )
105 \TMP@EnsureCode{42}{12}% *
106 \TMP@EnsureCode{43}{12}% +
107 \TMP@EnsureCode{44}{12}% ,
108 \TMP@EnsureCode{45}{12}% -
109 \TMP@EnsureCode{46}{12}% .
110 \TMP@EnsureCode{47}{12}% /
111 \TMP@EnsureCode{60}{12}% <
112 \TMP@EnsureCode{91}{12}% [
113 \TMP@EnsureCode{93}{12}% ]
114 \edef\mleftright@AtEnd{%
115   \mleftright@AtEnd
116   \escapechar\the\escapechar\relax
117   \noexpand\endinput
118 }
119 \escapechar=92 %

120 \begingroup\expandafter\expandafter\expandafter\endgroup
121 \expandafter\ifx\csname RequirePackage\endcsname\relax
122   \input infwarerr.sty\relax
123   \input ltxcmds.sty\relax
124 \else
125   \RequirePackage{infwarerr}[2010/04/08]%
126   \RequirePackage{ltxcmds}[2010/04/26]%
127 \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

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

\mleftright@OrgRight

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

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

```
130 \ltx@IfUndefined{protected}{%
131   \ltx@IfUndefined{DeclareRobustCommand}{%
132     \def\mleftright@Def{\def}%
133   }{%
134     \def\mleftright@Def{\DeclareRobustCommand*}%
135   }%
136 }{%
137   \def\mleftright@Def{\protected\def}%
138 }
139 \edef\mleftright@Def#1{%
140   \noexpand\ltx@IfUndefined{%
141     \noexpand\expandafter\noexpand\ltx@gobble\noexpand\string#1%
142   }{%
143     \expandafter\noexpand\mleftright@Def#1%
144   }{%
145     \noexpand\@PackageError{mleftright}{%
146       Command \noexpand\string#1 already defined%
147     }\noexpand\@ehd
148     \noexpand\ltx@gobble
149   }%
150 }
```

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

```
151 \ltx@IfUndefined{currentgrouplevel}{%
152   \catcode38=14 % & = comment
153 }{%
154   \catcode38=9 % & = ignore
155 }
```

\mleftright@GroupLevel

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

\mleftright@WrongGroup

```
157 & \def\mleftright@WrongGroup#1(#2){%
158 &   \ifnum\mleftright@GroupLevel<\ltx@zero
159 &     \@PackageError{mleftright}{%
160 &       Missing previous \string\mleft
161 &     }\@ehc
162 &   \else
163 &     \@PackageError{mleftright}{%
164 &       Unexpected group status for \string\mright%
165 &       \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%
```

5

```
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 & }%
```

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

```
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 }
```

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

```
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 }
```

3   Test

3.1   Catcode checks for loading

239 ⟨*test1⟩

240 \catcode`\{=1 %
241 \catcode`\}=2 %
242 \catcode`\#=6 %
243 \catcode`\@=11 %
244 \expandafter\ifx\csname count@\endcsname\relax
245   \countdef\count@=255 %
246 \fi
247 \expandafter\ifx\csname @gobble\endcsname\relax
248   \long\def\@gobble#1{}%
249 \fi
250 \expandafter\ifx\csname @firstofone\endcsname\relax
251   \long\def\@firstofone#1{#1}%
252 \fi
253 \expandafter\ifx\csname loop\endcsname\relax
254   \expandafter\@firstofone
255 \else
256   \expandafter\@gobble
257 \fi
258 {%
259   \def\loop#1\repeat{%
260   \def\body{#1}%
261   \iterate
262   }%
263   \def\iterate{%
264   \body
265   \let\next\iterate
266   \else
267   \let\next\relax
268   \fi
269   \next
270   }%
271   \let\repeat=\fi
272 }%
273 \def\RestoreCatcodes{}
274 \count@=0 %
275 \loop
276   \edef\RestoreCatcodes{%
277   \RestoreCatcodes
278   \catcode\the\count@=\the\catcode\count@\relax
279   }%
280 \ifnum\count@<255 %
281   \advance\count@ 1 %
282 \repeat
283
284 \def\RangeCatcodeInvalid#1#2{%
285   \count@=#1\relax
286   \loop
287   \catcode\count@=15 %
288   \ifnum\count@<#2\relax
289   \advance\count@ 1 %
290   \repeat
291 }
292 \def\RangeCatcodeCheck#1#2#3{%

```
293  \count@=#1\relax
294  \loop
295    \ifnum#3=\catcode\count@
296    \else
297      \errmessage{%
298        Character \the\count@\space
299        with wrong catcode \the\catcode\count@\space
300        instead of \number#3%
301      }%
302    \fi
303  \ifnum\count@<#2\relax
304    \advance\count@ 1 %
305  \repeat
306 }
307 \def\space{ }
308 \expandafter\ifx\csname LoadCommand\endcsname\relax
309  \def\LoadCommand{\input mleftright.sty\relax}%
310 \fi
311 \def\Test{%
312  \RangeCatcodeInvalid{0}{47}%
313  \RangeCatcodeInvalid{58}{64}%
314  \RangeCatcodeInvalid{91}{96}%
315  \RangeCatcodeInvalid{123}{255}%
316  \catcode`\@=12 %
317  \catcode`\\=0 %
318  \catcode`\%=14 %
319  \LoadCommand
320  \RangeCatcodeCheck{0}{36}{15}%
321  \RangeCatcodeCheck{37}{37}{14}%
322  \RangeCatcodeCheck{38}{47}{15}%
323  \RangeCatcodeCheck{48}{57}{12}%
324  \RangeCatcodeCheck{58}{63}{15}%
325  \RangeCatcodeCheck{64}{64}{12}%
326  \RangeCatcodeCheck{65}{90}{11}%
327  \RangeCatcodeCheck{91}{91}{15}%
328  \RangeCatcodeCheck{92}{92}{0}%
329  \RangeCatcodeCheck{93}{96}{15}%
330  \RangeCatcodeCheck{97}{122}{11}%
331  \RangeCatcodeCheck{123}{255}{15}%
332  \RestoreCatcodes
333 }
334 \Test
335 \csname @@end\endcsname
336 \end
337 ⟨/test1⟩
```

4 Installation

4.1 Download

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

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

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

Bundle. All the packages of the bundle 'oberdiek' 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/oberdiek.tds.zip

---

[1] http://ctan.org/pkg/mleftright

TDS refers to the standard "A Directory Structure for TeX Files" (CTAN:tds/tds.pdf). Directories with `texmf` in their name are usually organized this way.

4.2   Bundle installation

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

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

Script installation.   Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

4.3   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
```

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/oberdiek/mleftright.sty
mleftright.pdf	→ doc/latex/oberdiek/mleftright.pdf
test/mleftright-test1.tex	→ doc/latex/oberdiek/test/mleftright-test1.tex
mleftright.dtx	→ source/latex/oberdiek/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`.

4.4   Refresh file name databases

If your TeX distribution (teTeX, mikTeX, …) relies on file name databases, you must refresh these. For example, teTeX users run `texhash` or `mktexlsr`.

4.5   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
```

5 Catalogue

The following XML file can be used as source for the TEX Catalogue. The elements `caption` and `description` are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is `mleftright.xml`.

```
338 ⟨*catalogue⟩
339 <?xml version='1.0' encoding='us-ascii'?>
340 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
341 <entry datestamp='$Date$' modifier='$Author$' id='mleftright'>
342   <name>mleftright</name>
343   <caption>Variants of delimiters that act as maths open/close.</caption>
344   <authorref id='auth:oberdiek'/>
345   <copyright owner='Heiko Oberdiek' year='2010'/>
346   <license type='lppl1.3'/>
347   <version number='1.1'/>
348   <description>
349     The package defines variants <tt>\mleft</tt> and <tt>\mright</tt>
350     of <tt>\left</tt> and <tt>\right</tt>, that make the delimiters
351     act as <tt>\mathopen</tt> and <tt>\mathclose</tt>.  These commands
352     address spacing difficulties in subformulas.
353     <p/>
354     The package is part of the <xref refid='oberdiek'>oberdiek</xref> bundle.
355   </description>
356   <documentation details='Package documentation'
357     href='ctan:/macros/latex/contrib/oberdiek/mleftright.pdf'/>
358   <ctan file='true' path='/macros/latex/contrib/oberdiek/mleftright.dtx'/>
359   <miktex location='oberdiek'/>
360   <texlive location='oberdiek'/>
361   <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
362 </entry>
363 ⟨/catalogue⟩
```

6 Acknowledgement

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

Philipp Stephani: He solved the subscript problem.

7 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.
http://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. http://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. http://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. http://groups.google.com/group/comp.text.tex/msg/257aa6119bef878b

8   History

[2010/09/25 v1.0]

- The first version.

[2016/05/16 v1.1]

- Documentation updates.

9   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.