

The mleftmright 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.

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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:

```

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

```
\mleftrighrestore
```

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{mleft}{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@mleft\right.sty\endcsname
67 \ProvidesPackage{mleft\right}%
68 [2010/09/25 v1.0 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 mleft\right@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 L^AT_EX 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%
```

```

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 \mletright@AtEnd%
238 \end{package}

```

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 CTAN¹:

[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[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

TDS refers to the standard “A Directory Structure for T_EX 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 T_EX:

```
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):

<code>mleftright.sty</code>	→ <code>tex/generic/oberdiek/mleftright.sty</code>
<code>mleftright.pdf</code>	→ <code>doc/latex/oberdiek/mleftright.pdf</code>
<code>test/mleftright-test1.tex</code>	→ <code>doc/latex/oberdiek/test/mleftright-test1.tex</code>
<code>mleftright.dtx</code>	→ <code>source/latex/oberdiek/mleftright.dtx</code>

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 T_EX distribution (teT_EX, miK_TE_X, ...) relies on file name databases, you must refresh these. For example, teT_EX users run `texhash` or `mktexlsr`.

4.5 Some details for the interested

Attached source. The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk mleftright.pdf unpack_files output .
```

Unpacking with L^AT_EX. The `.dtx` chooses its action depending on the format:

plain T_EX: Run `docstrip` and extract the files.

L^AT_EX: Generate the documentation.

If you insist on using L^AT_EX for `docstrip` (really, `docstrip` does not need L^AT_EX), 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 pdfL^AT_EX:

```
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 [T_EX 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='1.0'>
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.

9 Index

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