

# The mleftright package

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## Abstract

T<sub>E</sub>X 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, T<sub>E</sub>X treats the whole expression as inner formula. In some circumstances T<sub>E</sub>X 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{\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  $\varepsilon$ -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 L<sup>A</sup>T<sub>E</sub>X.

```

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 [2010/09/25 v1.0 Math left/right delim. as open/close (H0)]%

```

```

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 mlefttright@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\mlefttright@AtEnd{%
96 \mlefttright@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\mlefttright@AtEnd{%
115 \mlefttright@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  $\varepsilon$ -TeX or L<sup>A</sup>T<sub>E</sub>X 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  $\varepsilon$ -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 \mletright@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 \mletright@Def\mleft{%
205 \mathopen{ }\mathclose\bgroup
206 & \edef\mletright@GroupLevel{\the\numexpr\the\currentgrouplevel+1}%
207 \mletright@OrgLeft
208 }

\mright
209 \mletright@Def\mright{%
210 & \ifnum\mletright@GroupLevel=\currentgrouplevel
211 & \ifnum16=\currentgrouptype
212 & \aftergroup\egroup
213 & \else
214 & \expandafter\mletright@WrongGroup
215 & \the\expandafter\currentgrouplevel
216 & \expandafter(\the\currentgrouptype)%
217 & \fi
218 & \else
219 & \expandafter\mletright@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 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<sup>1</sup>:

[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](#)

*TDS* refers to the standard “A Directory Structure for T<sub>E</sub>X 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<sub>E</sub>X:

```
tex mleftright.dtx
```

---

<sup>1</sup><http://ftp.ctan.org/tex-archive/>

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
mletright.sty      → tex/generic/oberdiek/mletright.sty
mletright.pdf      → doc/latex/oberdiek/mletright.pdf
test/mletright-test1.tex → doc/latex/oberdiek/test/mletright-test1.tex
mletright.dtx      → source/latex/oberdiek/mletright.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  $\text{T}_{\text{E}}\text{X}$  distribution (`te $\text{T}_{\text{E}}\text{X}$` , `mik $\text{T}_{\text{E}}\text{X}$` , ...) relies on file name databases, you must refresh these. For example, `te $\text{T}_{\text{E}}\text{X}$`  users run `texhash` or `mktextlsr`.

## 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 mletright.pdf unpack_files output .
```

**Unpacking with  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ .** The `.dtx` chooses its action depending on the format:

**plain  $\text{T}_{\text{E}}\text{X}$ :** Run `docstrip` and extract the files.

**$\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ :** Generate the documentation.

If you insist on using  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  for `docstrip` (really, `docstrip` does not need  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$ ), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{mletright.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 $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$` :

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

## 5 Catalogue

The following XML file can be used as source for the **T<sub>E</sub>X 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

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.

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