

The mleftright package

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Abstract

T_EX 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 | 1 |
| 1.1 | Use | 2 |
| 2 | Implementation | 2 |
| 3 | Test | 7 |
| 3.1 | Catcode checks for loading | 7 |
| 4 | Installation | 9 |
| 4.1 | Download | 9 |
| 4.2 | Bundle installation | 9 |
| 4.3 | Package installation | 9 |
| 4.4 | Refresh file name databases | 10 |
| 4.5 | Some details for the interested | 10 |
| 5 | Catalogue | 11 |
| 6 | Acknowledgement | 11 |
| 7 | References | 11 |
| 8 | History | 12 |
| | [2010/09/25 v1.0] | 12 |
| 9 | Index | 12 |

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_EX treats the whole expression as inner formula. In some circumstances T_EX adds extra space before or after an inner formula. Example:

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

```

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 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 \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 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](#)

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
```

¹<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_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

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.

| Symbols | | E |
|-----------------------|--|---|
| \# | 242 | \empty 17, 18 |
| \% | 318 | \end 336 |
| \@ | 243, 316 | \endcsname 14, 21, 50, 66, |
| \@PackageError | 145, 159, 163 | 76, 121, 244, 247, 250, 253, 308, 335 |
| \@ehc | 161 | \endinput 29, 117 |
| \@ehd | 147, 201 | \endlinechar 4, 35, 71, 77, 89 |
| \@firstofone | 251, 254 | \errmessage 297 |
| \@gobble | 248, 256 | \escapechar 116, 119 |
| \@undefined | 58 | |
| \\ | 317 | I |
| \{ | 240 | \ifcase 175 |
| \} | 241 | \ifnum 158, 165, |
| | | 171, 210, 211, 280, 288, 295, 303 |
| A | | \ifx 15, 18, 21, 50, 58, 61, 121, |
| \advance | 281, 289, 304 | 230, 233, 244, 247, 250, 253, 308 |
| \aftergroup | 29, 212 | \immediate 23, 52 |
| | | \input 122, 123, 309 |
| B | | \iterate 261, 263, 265 |
| \body | 260, 264 | |
| | | L |
| C | | \left 128, 226, 230, 231, 350 |
| \catcode | 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 69, 70, 72, 73, 74, 78, 79, 80, 81, 82, 83, 84, 87, 88, 90, 91, 92, 93, 97, 99, 152, 154, 240, 241, 242, 243, 278, 287, 295, 299, 316, 317, 318 | \LoadCommand 309, 319 |
| \count@ | 245, 274, 278, 280, 281, 285, 287, 288, 289, 293, 295, 298, 299, 303, 304 | \loop 259, 275, 286, 294 |
| \countdef | 245 | \ltx@gobble 141, 148 |
| \csname | 14, 21, 50, 66, 76, 121, 244, 247, 250, 253, 308, 335 | \ltx@gobblefour 177 |
| \currentgrouplevel | 206, 210, 215, 220 | \ltx@gobbletwo 178 |
| \currentgrouptype | 211, 216, 221 | \ltx@ifUndefined 130, 131, 140, 151 |
| | | \ltx@zero 158 |
| D | | M |
| \DeclareRobustCommand | 134 | \mathclose 205, 351 |
| | | \mathopen 205, 351 |
| | | \MessageBreak 167, 173, 198 |
| | | \mleft 2, 160, 204, 226, 230, 349 |
| | | \mleftright 2, 225 |
| | | \mleftright@AtEnd 95, 96, 114, 115, 237 |
| | | \mleftright@Def 130, 204, 209, 225, 229 |
| | | \mleftright@GroupLevel |
| | | 156, 158, 165, 169, 206, 210 |

| | | | |
|---|--|------------------------------------|--|
| <code>\mletright@OrgLeft</code> ... | 128 , 207 , 231 | <code>\repeat</code> | 259 , 271 , 282 , 290 , 305 |
| <code>\mletright@OrgRight</code> .. | 129 , 223 , 234 | <code>\RequirePackage</code> | 125 , 126 |
| <code>\mletright@WrongGroup</code> | 157 , 214 , 219 | <code>\RestoreCatcodes</code> .. | 273 , 276 , 277 , 332 |
| <code>\mletrightrestore</code> | 2 , 229 | <code>\right</code> | 129 , 227 , 233 , 234 , 350 |
| <code>\mright</code> | 164 , 209 , 227 , 233 , 349 | | |
| N | | S | |
| <code>\next</code> | 265 , 267 , 269 | <code>\space</code> | 198 , 298 , 299 , 307 |
| <code>\number</code> | 300 | T | |
| <code>\numexpr</code> | 206 | <code>\Test</code> | 311 , 334 |
| P | | <code>\the</code> | 77 , 78 , 79 , 80 , 81 , 82 , 83 , 84 , 97 , 116 , 206 , 215 , 216 , 220 , 221 , 278 , 298 , 299 |
| <code>\PackageInfo</code> | 26 | <code>\TMP@EnsureCode</code> | 94 , 101 , 102 , 103 , 104 , 105 , 106 , 107 , 108 , 109 , 110 , 111 , 112 , 113 |
| <code>\protected</code> | 137 | W | |
| <code>\ProvidesPackage</code> | 19 , 67 | <code>\write</code> | 23 , 52 |
| R | | X | |
| <code>\RangeCatcodeCheck</code> | 292 , 320 , 321 , 322 , 323 , 324 , 325 , 326 , 327 , 328 , 329 , 330 , 331 | <code>\x</code> | 14 , 15 , 18 , 22 , 26 , 28 , 51 , 56 , 66 , 75 , 87 |
| <code>\RangeCatcodeInvalid</code> | 284 , 312 , 313 , 314 , 315 | | |