The **rmathbr** package

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Contents

1 Introduction

Repeating of math operator at the broken line and the new line in inline equations is used in Cyrillic mathematical typography (Russian for example), but unfortunately LaTeX doesn't provide such an option. There was an attempt to do it many years ago (see M.I. Grinchuk "TeX and Russian Traditions of Typesetting",TUGboat 17(4) (1996) 385), but there was no ready to use package.

This package extends ideas described in "TeX and Russian Traditions of Typesetting" and supports most of LaTeX mathematical packages (some known issues are listed in "Known issues" section below).

2 Usage

Just include the package using `\usepackage{rmathbr}` command.

$$(a+b)^2 = a^2 + \quad \times (a-b), \ a^3 \pm \quad (1-x)^{-2} = 1 + \quad + \cos^2\alpha \ = \ 1, \quad = a^{-2}(\sin ax -$$
$$+2ab+b^2, \ a^2 - \quad \pm b^3 = (a\pm b)\times \quad + 2x + 3x^2 + \quad \int x\sin ax\,dx = \quad - ax\cos ax).$$
$$-b^2 = (a+b)\times \quad \times(a^2 \mp ab+b^2), \quad + \ldots, \ \sin^2\alpha +$$

It's recommended to load **rmathbr** after other packages, because of **rmathbr** has special support of many math-related packages: amsfonts, amssymb, amstex,

boisik, euler, eulervm, fourier, icomma, latexsym, lucbmath, lucidabr, lucmin, lucmtime, luctime, mathbbol, mdwmath, program, sbbm, stmaryrd, wasysym.

Please, submit any found bugs to https://github.com/dryabov/rmathbr/issues.

3 Options

The rmathbr package supports following options:

- `mathactivechars` (default): assign 12 category to ^ and _ characters.
- `activechars`: assign active category to ^ and _ characters.
- `noactivechars`: assign default categories to ^ and _ characters (7 and 8, correspondingly).

In some cases it might be necessary to change default option for compatibility with other packages.

4 Macros

`\*`

Macro `\*` is used to mark multiplication point that is invisible and changed to × at break only. E.g. `(a+b)\*(a-b)`.

`\cdott`

It looks like it is impossible in LaTeX to correctly change `\cdot` (·) to `\times` (×) at break, that's why `\cdott` command is introduced. It correctly displays · and changes it to ×, but has some limitations:

- It cannot be used inside of group (e.g. `{a\cdott b}`).
- It doesn't support math display modes (e.g. `\scriptstyle a\cdott b`)

These limitations are related to the fact that internally `\cdott` closes math mode, insert multiplication character in text mode, and open math mode again.

`\nobr`

This command is used to prevent break expression on the following math operator. E.g. `a\nobr-b`.

`\SetBreakableBin`

Declares breakable binary operator, e.g. `\SetBreakableBin{\MyPlus}`.

`\SetBreakableRel`

Declares breakable relation operator, e.g. `\SetBreakableRel{\MyEqual}`.

`\SetBreakableInner`

Declares breakable "inner" expression, e.g. `\SetBreakableInner{\ldots}`.

`\SetOpenBracket`

Declares opening bracket (rmathbr disables break directly after brackets), e.g. `\SetOpenBracket{\MyOpenBracket}`.

`\SetMathOperator`

Declares math operator (rmathbr disables break directly after operators), e.g. `\SetMathOperator{\MySum}`.

`\SetPunctuation`

Declares punctuation command (rmathbr disables break directly after punctuation), e.g. `\SetPunctuation{\MyColon}`.

5   Known issues

- expressions like `$x+\ldots+y$` may be broken on pluses
- 'xy' package: should be loaded after 'rmathbr' to work properly
- 'breqn' package: cannot work together with 'rmathbr'

6   Changelog

1.0 (02-June-2015)

- fix break after math operators (`\sum`, `\int`, etc.)
- add documentation

0.99 (15-November-2010)

- don't hyphenate trailing mathsign (e.g. in `$2+2=$`)
- don't change redefined symbols (`\le`, `\ge`, `\to`, etc.)

0.98 (31-January-2010)

- fix hyphenation on `:=`
- correct work with 'icomma' package and option 'icomma' of 'eulervm' package
- correct work with 'program' package
- symbols have been added from boisik, euler, fourier, lucbmath, lucidabr, lucmin, lucmtime, luctime, mathbbol, mdwmath, sbbm, stmaryrd and wasysym packages.
- remove shrinking of space in math (breaked url package)
- don't hyphenate after punctuation (',', ';', '`\colon`' etc.)
- create broken commands as robust ones
- some fixes of redeclaring of AMS commands
- commented hyphenation on `\ldots` and `\cdots`, as TEXdoesn't break here

0.97 (08-October-2009)

- fix problem with operators like '+^`\leq`'

0.96 (29-September-2009)

- fix problem with '-' in AMS's `\DeclareMathOperator`
- fix problem with `\ldots` in text mode

0.95 (28-September-2009)

- fix problem with sub/sup-scripts after relations
- fix hyphenation on `\ldots`
- AMS/Lucida left brackets (`\lvert`, `\lVert`, `\ulcorner`, `\llcorner`) support
- mathbbol.sty left bracket (`\Lbrack`) support
- huge code refactoring

0.91 (21-September-2009)

- fix problem with problem with space after brackets

0.90 (20-September-2009)

- first public release

7   Code

Initialization

```
1 \@ifpackageloaded{breqn}%
2 {
3   \PackageError{rmathbr}{'rmathbr' package cannot be used together with 'breqn' package!}{}%
4 }{}
5 \@ifpackageloaded{xy}%
6 {
7   \PackageError{rmathbr}{'rmathbr' package should be loaded before 'xy' package!}{}%
8 }{}
```

Interface

\nobr   Makes next symbol nonbreakable.
```
9 \def\nobr{\penalty\relpenalty}
```

\SetBreakableBin   Makes breakable binary operation.
```
10 \def\SetBreakableBin#1{\rmathbr@setbreakable{#1}{\brokenbin}}
```

\SetBreakableRel   Makes breakable relation sign.
```
11 \def\SetBreakableRel#1{\rmathbr@setbreakable{#1}{\brokenrel}}
```

\SetBreakableInner   Makes breakable inner (like \ldots).
```
12 \def\SetBreakableInner#1{\rmathbr@setbreakable{#1}{\brokeninner}}
```

\SetOpenBracket   Disables breaks after open bracket.
```
13 \def\SetOpenBracket#1{\rmathbr@nobrafter{#1}}
```

\SetMathOperator   Disables breaks after math operator.
```
14 \def\SetMathOperator#1{\rmathbr@nobrafter{#1}}
```

\SetPunctuation   Disables breaks after punctuation sign.
```
15 \def\SetPunctuation#1{\rmathbr@nobrafter{#1}}
```

Makes argument as breakable binary operation.
```
16 \DeclareRobustCommand{\brokenbin}[1]{\rmathbr@brokenbin{#1}}
```
Makes argument as breakable relation sign.
```
17 \DeclareRobustCommand{\brokenrel}[1]{\rmathbr@brokenrel{#1}}
```
Makes argument as breakable inner.
```
18 \DeclareRobustCommand{\brokeninner}[1]{\rmathbr@brokeninner{#1}}
```

Implementation

Save default penalty to \exhyphenpenalty (as \exhyphenpenalty will be actual penalty for math breaks).

```
19 \exhyphenpenalty=\relpenalty
```

Disable default breaks.

```
20 \relpenalty=13131
21 \binoppenalty=14141
```

First symbol in equation is nonbreakable.

```
22 \expandafter\everymath\expandafter{\the\everymath\nobr }
```

Setup sub- and superscripts.

```
23 \ifnum\catcode'\^=12%
24   \begingroup%
25     \catcode'\^\active
26     \global\let\rmathbr@superscript@text=^%
27   \endgroup%
28 \else%
29   \let\rmathbr@superscript@text=^%
30 \fi
31 \ifnum\catcode'\_=12%
32   \begingroup%
33     \catcode'\_\active
34     \global\let\rmathbr@subscript@text=_%
35   \endgroup%
36 \else%
37   \let\rmathbr@subscript@text=_%
38 \fi
```

\rmathbr@superscript

```
39 \def\rmathbr@superscript#1{\rmathbr@superscript@text{{#1}}}
```

\rmathbr@subscript

```
40 \def\rmathbr@subscript#1{\rmathbr@subscript@text{{#1}}}
```

```
41 \begingroup
42   \catcode'\^\active\gdef^{\rmathbr@superscript}
43   \catcode'\_\active\gdef_{\rmathbr@subscript}
44 \endgroup
```

Save existing commands.

```
45 \begingroup\catcode'\_=13\catcode'\^=13\lowercase{\endgroup
46 \AtBeginDocument%
47 {%
48   \ifnum\catcode'\^=13
49     \let\rmathbr@superscript@text@active=^
50     \DeclareRobustCommand{\rmathbrsuperscript}[1]{\rmathbr@superscript@text@active{{#1}}}
51   \else
52     \DeclareRobustCommand{\rmathbrsuperscript}[1]{\rmathbr@superscript@text{{#1}}}
53   \fi
54   \def^{\rmathbrsuperscript}
55   \def\rmathbr@superscript@macro{\rmathbrsuperscript}
56   \ifnum\catcode'\_=13
```

```
57      \let\rmathbr@subscript@text@active=_
58      \DeclareRobustCommand{\rmathbrsubscript}[1]{\rmathbr@subscript@text@active{{#1}}}
59    \else
60      \DeclareRobustCommand{\rmathbrsubscript}[1]{\rmathbr@subscript@text{{#1}}}
61    \fi
62    \def_{\rmathbrsubscript}
63    \def\rmathbr@subscript@macro{\rmathbrsubscript}
64 }}
```

Process options.

```
65 \DeclareOption{mathactivechars}%
66 {
67    \catcode'\^=12\catcode'\_=12
68 }
69 \DeclareOption{activechars}%
70 {
71    \catcode'\^\active\catcode'\_\active
72 }
73 \DeclareOption{noactivechars}%
74 {
75    \catcode'\^=7\catcode'\_=8
76 }
77 \ExecuteOptions{mathactivechars}%
78 \ProcessOptions
```

Basic math.

```
79 \begingroup
80    \catcode'\=\active
81    \ifnum\mathcode'\=<32768
82      \xdef={\noexpand\brokenbin{\mathchar\number\mathcode'\=}}
83    \else
84      \gdef={\brokenbin{\mathchar12349}}
85    \fi
86 \endgroup
87 \begingroup
88    \catcode'\+\active
89    \ifnum\mathcode'\+<32768
90      \xdef+{\noexpand\brokenbin{\mathchar\number\mathcode'\+}}
91    \else
92      \gdef+{\brokenbin{\mathchar8235}}
93    \fi
94 \endgroup
95 \begingroup
96    \catcode'\-\active
97    \ifnum\mathcode'\-<32768
98      \xdef-{\noexpand\brokenbin{\mathchar\number\mathcode'\-}}
99    \else
100     \gdef-{\brokenbin{\mathchar8704}}
101   \fi
102 \endgroup
103 \begingroup
104   \catcode'\*\active
105   \ifnum\mathcode'\*<32768
106     \xdef*{\noexpand\brokenbin{\mathchar\number\mathcode'\*}}
107   \else
```

```
108      \gdef*{\brokenbin{\mathchar8707}}
109    \fi
110  \endgroup
111  \begingroup
112    \ifnum\mathcode`\<<32768
113      \catcode`\<\active
114      \xdef<{\noexpand\brokenbin{\mathchar\number\mathcode`\<}}
115    \else
116      \catcode`\<\active
117      \gdef<{\brokenbin{\mathchar12604}}
118    \fi
119  \endgroup
120  \begingroup
121    \catcode`\>\active
122    \ifnum\mathcode`\><32768
123      \xdef>{\noexpand\brokenbin{\mathchar\number\mathcode`\>}}
124    \else
125      \gdef>{\brokenbin{\mathchar12606}}
126    \fi
127  \endgroup
128  \begingroup
129    \catcode`\(\active
130    \xdef({\mathopen\delimiter\number\delcode`\(\noexpand\nobr }
131  \endgroup
132  \begingroup
133    \catcode`\[\active %\]
134    \xdef[{\mathopen\delimiter\number\delcode`\[\noexpand\nobr }
135  \endgroup
136  \AtBeginDocument%
137  {
138    \mathcode`\==32768% "8000
139    \mathcode`\<=32768
140    \mathcode`\>=32768
141    \mathcode`\+=32768
142    \mathcode`\-=32768
143    \mathcode`\*=32768
144    \mathcode`\_=32768
145    \mathcode`\^=32768
146    \mathcode`\(=32768
147    \mathcode`\[=32768 %\]
148    \mathcode`\:=32768
149    \mathcode`\,=32768
150    \mathcode`\;=32768
151    \let\rmathbr@orig@resetMathstrut=\resetMathstrut@
152    \begingroup
153      \gdef\resetMathstrut@
154      {
155        \mathcode`\(=16424% "4028
156        \rmathbr@orig@resetMathstrut
157        \mathcode`\(=32768% "8000
158      }
159      \gdef\newmcodes@
160      {
161        \mathcode`\'=39
```

```
162      \mathcode'\*=42
163      \mathcode'\.=24890% "613A
164      \mathcode'\-=45
165      \mathcode'\/=47
166      \mathcode'\:=24634% "603A
167      \relax
168    }
169  \endgroup%
170 }
171 \begingroup
172   \catcode'\:\active \gdef:{\futurelet\rmathbr@let@token\rmathbr@colontest}
173 \endgroup
```

\rmathbr@colontest   Check for :=.

```
174 \def\rmathbr@colontest%
175 {
176   \ifx=\rmathbr@let@token
177     \expandafter\rmathbr@letsign
178   \else
179     \expandafter\rmathbr@colon
180   \fi
181 }%
182 \ifnum\mathcode'\:<32768
183   \edef\rmathbr@letsign#1{\noexpand\brokenrel{\mathchar\number\mathcode'\:\mathchar\number\mat
184   \edef\rmathbr@colon{\noexpand\brokenrel{\mathchar\number\mathcode'\:}}
185 \else
186   \def\rmathbr@letsign#1{\brokenrel{\mathchar12346\mathchar12349}}
187   \def\rmathbr@colon{\brokenrel{\mathchar12346}}
188 \fi
```

Check for 'icomma' package and 'eulervm' package with 'icomma' option.

```
189 \begingroup
190   \catcode'\,\active
191   \@ifpackageloaded{icomma}% check for 'icomma' package
192   {
193     \expandafter\gdef\expandafter\sm@rtcomma\expandafter{\sm@rtcomma\nobr}
194   }{
195     \ifx\domathcomma\undefined% check for 'eulervm' package with 'icomma' option
196       \ifnum\mathcode'\,<32768
197         \xdef,{\mathpunct\mathchar\number\mathcode'\,\noexpand\nobr }
198       \else
199         \gdef,{\mathpunct\mathchar24891\nobr }
200       \fi
201     \else
202       \expandafter\gdef\expandafter\domathcomma\expandafter{\domathcomma\nobr}
203     \fi
204   }
205 \endgroup
```

Check for 'program' package.

```
206 \begingroup
207   \catcode'\;\active
208   \@ifpackageloaded{program}%
209   {
```

```
210    \gdef;{\ifmmode\semicolon\;\nobr\else\@semicolon\fi}
211  }{
212    \ifnum\mathcode`\;<32768
213      \xdef;{\mathpunct\mathchar\number\mathcode`\;\noexpand\nobr }
214    \else
215      \gdef;{\mathpunct\mathchar24635\nobr }
216    \fi
217  }
218 \endgroup
```

\rmathbr@ReDeclareRobustCommand

```
219 \def\rmathbr@ReDeclareRobustCommand#1#2% Command without arguments
220 {
221   \begingroup
222     \ifx#1\undefined
223     \else
224       \edef\var@orig@I{rmathbr@orig@\expandafter\@gobble\string#1}
225       \edef\var@Ispace{\expandafter\@gobble\string#1 }
226       \expandafter\ifx\csname\var@orig@I\endcsname\relax
227         \expandafter\ifx\csname\var@Ispace\endcsname\relax
228           \global\expandafter\let\csname\var@orig@I\endcsname#1
229         \else
230           \global\expandafter\let\csname\var@orig@I\expandafter\endcsname\csname\var@Ispace\en
231         \fi
232       \fi
233       \expandafter\gdef\csname\var@Ispace\endcsname{#2}% no arguments
234       \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
235     \fi
236   \endgroup%
237 }
```

\rmathbr@ReDeclareRobustCommandI

```
238 \def\rmathbr@ReDeclareRobustCommandI#1#2% Command with one argument
239 {
240   \begingroup
241     \ifx#1\undefined
242     \else
243       \edef\var@orig@I{rmathbr@orig@\expandafter\@gobble\string#1}
244       \edef\var@Ispace{\expandafter\@gobble\string#1 }
245       \expandafter\ifx\csname\var@orig@I\endcsname\relax
246         \expandafter\ifx\csname\var@Ispace\endcsname\relax
247           \global\expandafter\let\csname\var@orig@I\endcsname#1
248         \else
249           \global\expandafter\let\csname\var@orig@I\expandafter\endcsname\csname\var@Ispace\en
250         \fi
251       \fi
252       \expandafter\gdef\csname\var@Ispace\endcsname##1{#2}% one argument
253       \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
254     \fi
255   \endgroup%
256 }
```

\rmathbr@setbrokens

```
257 \def\rmathbr@setbrokens%
```

```
258 {
259   \rmathbr@ReDeclareRobustCommandI{\brokenbin}{\rmathbr@brokenbin{##1}}
260   \rmathbr@ReDeclareRobustCommandI{\brokenrel}{\rmathbr@brokenrel{##1}}
261   \rmathbr@ReDeclareRobustCommandI{\brokeninner}{\rmathbr@brokeninner{##1}}%
262 }
```

\rmathbr@unsetbrokens

```
263 \def\rmathbr@unsetbrokens%
264 {
265   \def\brokenbin##1{##1}
266   \def\brokenrel##1{##1}
267   \def\brokeninner##1{##1}%
268 }
```

\rmathbr@brokenbin

```
269 \def\rmathbr@brokenbin#1%
270 {
271   \relax
272   \def\rmathbr@arg{#1}
273   \def\rmathbr@this{\rmathbr@brokenbin}
274   \def\rmathbr@output{\rmathbr@@brokenbin}
275   \futurelet\rmathbr@let@token\rmathbr@brokenop%
276 }
```

\rmathbr@brokenrel

```
277 \def\rmathbr@brokenrel#1%
278 {
279   \relax
280   \def\rmathbr@arg{#1}
281   \def\rmathbr@this{\rmathbr@brokenrel}
282   \def\rmathbr@output{\rmathbr@@brokenrel}
283   \futurelet\rmathbr@let@token\rmathbr@brokenop%
284 }
```

\rmathbr@brokeninner

```
285 \def\rmathbr@brokeninner#1%
286 {
287   \relax
288   \def\rmathbr@arg{#1}
289   \def\rmathbr@this{\rmathbr@brokeninner}
290   \def\rmathbr@output{\rmathbr@@brokeninner}
291   \futurelet\rmathbr@let@token\rmathbr@brokenop%
292 }
```

\rmathbr@@brokenbin

```
293 \def\rmathbr@@brokenbin#1%
294 {
295   \ifnum\lastpenalty=\relpenalty
296     \mathbin{#1}
297   \else
298     \mathbin{#1}
299     \ifx$\rmathbr@let@token
300     \else
```

```
301        \rmathbr@selector{#1}
302      \fi
303   \fi
304   \rmathbr@setbrokens
305   \penalty\binoppenalty %
306 }
```

\rmathbr@@brokenrel

```
307 \def\rmathbr@@brokenrel#1%
308 {
309   \ifnum\lastpenalty=\relpenalty
310     \mathrel{#1}
311   \else
312     \mathrel{#1}
313     \ifx$\rmathbr@let@token
314     \else
315       \rmathbr@selector{#1}
316     \fi
317   \fi
318   \rmathbr@setbrokens
319   \penalty\relpenalty %
320 }
```

\rmathbr@@brokeninner

```
321 \def\rmathbr@@brokeninner#1%
322 {
323   \ifnum\lastpenalty=\relpenalty
324     \mathinner{#1}
325   \else
326     \mathinner{#1}
327     \ifx$\rmathbr@let@token
328     \else
329       \rmathbr@selector{#1}
330     \fi
331   \fi
332   \rmathbr@setbrokens
333   \penalty\relpenalty %
334 }
```

\rmathbr@selector

```
335 \def\rmathbr@selector#1%
336 {
337   \mathchoice
338     {\discretionary{}{\hbox{$\m@th\displaystyle#1$}}{}}
339     {\discretionary{}{\hbox{$\m@th\textstyle#1$}}{}}
340     {\discretionary{}{\hbox{$\m@th\scriptstyle#1$}}{}}
341     {\discretionary{}{\hbox{$\m@th\scriptscriptstyle#1$}}{}}%
342 }

343 \begingroup\catcode`\_=12\catcode`\^=12
```

\rmathbr@brokenop

```
344 \gdef\rmathbr@brokenop%
345 {
```

```
346   \ifmmode
347     \rmathbr@unsetbrokens
348     \ifx\rmathbr@subscript@macro\rmathbr@let@token
349       \let\@command=\rmathbr@brokenglue
350     \else\ifx_\rmathbr@let@token
351       \let\@command=\rmathbr@brokenglue
352     \else\ifx\rmathbr@superscript@macro\rmathbr@let@token
353       \let\@command=\rmathbr@brokenglue
354     \else\ifx^\rmathbr@let@token
355       \let\@command=\rmathbr@brokenglue
356     \else\ifx\relax\rmathbr@let@token
357       \let\@command=\rmathbr@brokenskiprelax
358     \else
359       \let\@command=\rmathbr@output
360     \fi\fi\fi\fi\fi
361   \else
362     \let\@command=\relax
363   \fi
364   \expandafter\@command{\rmathbr@arg}%
365 }

366 \endgroup
```

\rmathbr@brokenglue

```
367 \def\rmathbr@brokenglue#1#2#3%
368 {
369   \edef\rmathbr@temp{#1#2{#3}}
370   \expandafter\rmathbr@this{\rmathbr@temp}%
371 }
```

\rmathbr@brokenskiprelax

```
372 \def\rmathbr@brokenskiprelax#1#2%
373 {
374   \edef\rmathbr@temp{#1#2}
375   \expandafter\rmathbr@this{\rmathbr@temp}%
376 }
```

\rmathbr@setbreakable

```
377 \def\rmathbr@setbreakable#1#2%
378 {
379   \begingroup
380     \ifx#1\undefined
381     \else
382       \edef\rmathbr@orig{rmathbr@orig@\expandafter\@gobble\string#1}
383       \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
384         \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{\expandafter#2\e
385       \fi
386     \fi
387   \endgroup%
388 }
```

\rmathbr@nobrafter

```
389 \def\rmathbr@nobrafter#1%
390 {
```

```
391   \begingroup
392     \ifx#1\undefined
393     \else
394       \edef\rmathbr@orig{rmathbr@orig@\expandafter\@gobble\string#1}
395       \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
396         \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{\csname\rmathbr@
397       \fi
398     \fi
399   \endgroup%
400 }
```

Redeclaration of math signs

Redeclare \not.

```
401 \rmathbr@ReDeclareRobustCommandI{\not}%
402 {
403   \begingroup
404     \edef\rmathbr@orig{rmathbr@orig@\expandafter\@gobble\string#1}
405     \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
406       \brokenrel{\rmathbr@orig@not#1}
407     \else
408       \expandafter\brokenrel\expandafter{\expandafter\rmathbr@orig@not\csname\rmathbr@orig\end
409     \fi
410   \endgroup%
411 }
```

Open brackets.

```
412 \rmathbr@ReDeclareRobustCommandI{\bigl}{\mathopen\big#1\nobr}
413 \rmathbr@ReDeclareRobustCommandI{\Bigl}{\mathopen\Big#1\nobr}
414 \rmathbr@ReDeclareRobustCommandI{\biggl}{\mathopen\bigg#1\nobr}
415 \rmathbr@ReDeclareRobustCommandI{\Biggl}{\mathopen\Bigg#1\nobr}
416 \SetOpenBracket{\lmoustache}
417 \SetOpenBracket{\langle}
418 \SetOpenBracket{\lbrace}
419 \SetOpenBracket{\lceil}
420 \SetOpenBracket{\lfloor}
421 \SetOpenBracket{\lgroup}
422 \SetOpenBracket{\lvert}
423 \SetOpenBracket{\lVert}
424 \SetOpenBracket{\ulcorner}
425 \SetOpenBracket{\llcorner}
426 \SetOpenBracket{\Lbrack}
```

Math operators.

```
427 \SetMathOperator{\coprod}
428 \SetMathOperator{\bigvee}
429 \SetMathOperator{\bigwedge}
430 \SetMathOperator{\biguplus}
431 \SetMathOperator{\bigcap}
432 \SetMathOperator{\bigcup}
433 \SetMathOperator{\int}
434 \SetMathOperator{\prod}
435 \SetMathOperator{\sum}
436 \SetMathOperator{\bigotimes}
```

```
437 \SetMathOperator{\bigoplus}
438 \SetMathOperator{\bigodot}
439 \SetMathOperator{\oint}
440 \SetMathOperator{\bigsqcup}
441 \SetMathOperator{\smallint}
```

Punctuations.

```
442 \SetPunctuation{\ldotp}
443 \SetPunctuation{\cdotp}
444 \SetPunctuation{\colon}
445 \SetPunctuation{\period}
```

Binary Operations.

```
446 \SetBreakableBin{\triangleleft}
447 \SetBreakableBin{\triangleright}
448 \SetBreakableBin{\bigtriangleup}
449 \SetBreakableBin{\bigtriangledown}
450 \SetBreakableBin{\wedge} \SetBreakableBin{\land}
451 \SetBreakableBin{\vee}    \SetBreakableBin{\lor}
452 \SetBreakableBin{\cap}
453 \SetBreakableBin{\cup}
454 \SetBreakableBin{\ddagger}
455 \SetBreakableBin{\dagger}
456 \SetBreakableBin{\sqcap}
457 \SetBreakableBin{\sqcup}
458 \SetBreakableBin{\uplus}
459 \SetBreakableBin{\amalg}
460 \SetBreakableBin{\diamond}
461 \SetBreakableBin{\bullet}
462 \SetBreakableBin{\wr}
463 \SetBreakableBin{\div}
464 \SetBreakableBin{\odot}
465 \SetBreakableBin{\oslash}
466 \SetBreakableBin{\otimes}
467 \SetBreakableBin{\ominus}
468 \SetBreakableBin{\oplus}
469 \SetBreakableBin{\mp}
470 \SetBreakableBin{\pm}
471 \SetBreakableBin{\circ}
472 \SetBreakableBin{\bigcirc}
473 \SetBreakableBin{\setminus}
474 \SetBreakableBin{\ast}
475 \SetBreakableBin{\star}
476 \SetBreakableBin{\times}
```

\cdott \cdott is \cdot that is changed to \times at break point.

```
477 \def\cdott{%
478     \mkern\medmuskip$%
479     \discretionary{\the\textfont2\char2}{\the\textfont2\char2}{\the\textfont2\char1}%
480     $\mkern\medmuskip%
481 }
```

*

```
482 \def\*{\mathbin{}%
483   \mathchoice{%
```

```
484        \discretionary{\hbox{$\m@th\displaystyle\times$}}{\hbox{$\m@th\displaystyle\times$}}{}%
485    }{%
486        \discretionary{\hbox{$\m@th\textstyle\times$}}{\hbox{$\m@th\textstyle\times$}}{}%
487    }{%
488        \discretionary{\hbox{$\m@th\scriptstyle\times$}}{\hbox{$\m@th\scriptstyle\times$}}{}%
489    }{%
490        \discretionary{\hbox{$\m@th\scriptscriptstyle\times$}}{\hbox{$\m@th\scriptscriptstyle\ti
491    }%
492  \penalty\binoppenalty%
493 }
```

Relations.

```
494 \SetBreakableRel{\propto}
495 \SetBreakableRel{\sqsubseteq}
496 \SetBreakableRel{\sqsupseteq}
497 \SetBreakableRel{\parallel}
498 \SetBreakableRel{\mid}
499 \SetBreakableRel{\dashv}
500 \SetBreakableRel{\vdash}
501 \SetBreakableRel{\leq} \SetBreakableRel{\le}
502 \SetBreakableRel{\geq} \SetBreakableRel{\ge}
503 \SetBreakableRel{\succ}
504 \SetBreakableRel{\prec}
505 \SetBreakableRel{\approx}
506 \SetBreakableRel{\succeq}
507 \SetBreakableRel{\preceq}
508 \SetBreakableRel{\supset}
509 \SetBreakableRel{\subset}
510 \SetBreakableRel{\supseteq}
511 \SetBreakableRel{\subseteq}
512 \SetBreakableRel{\in}
513 \SetBreakableRel{\ni} \SetBreakableRel{\owns}
514 \SetBreakableRel{\gg}
515 \SetBreakableRel{\ll}
516 \SetBreakableRel{\sim}
517 \SetBreakableRel{\simeq}
518 \SetBreakableRel{\perp}
519 \SetBreakableRel{\equiv}
520 \SetBreakableRel{\asymp}
521 \SetBreakableRel{\smile}
522 \SetBreakableRel{\frown}
523 \SetBreakableRel{\models}
524 \SetBreakableRel{\cong}
525 \SetBreakableRel{\notin}
526 \SetBreakableRel{\doteq}
527 \SetBreakableRel{\bowtie}
528 \SetBreakableRel{\neq} % Works well without \SetBreakableRel
529 \SetBreakableRel{\ne}  % Works well without \SetBreakableRel
```

Arrows.

```
530 \SetBreakableRel{\nearrow}
531 \SetBreakableRel{\searrow}
532 \SetBreakableRel{\nwarrow}
533 \SetBreakableRel{\swarrow}
```

```
534 \SetBreakableRel{\Leftrightarrow}
535 \SetBreakableRel{\Leftarrow}
536 \SetBreakableRel{\Rightarrow}
537 \SetBreakableRel{\leftrightarrow}
538 \SetBreakableRel{\leftarrow}  \SetBreakableRel{\gets}
539 \SetBreakableRel{\rightarrow} \SetBreakableRel{\to}
540 \SetBreakableRel{\leftharpoonup}
541 \SetBreakableRel{\leftharpoondown}
542 \SetBreakableRel{\rightharpoonup}
543 \SetBreakableRel{\rightharpoondown}
544 \SetBreakableRel{\longleftarrow}
545 \SetBreakableRel{\Longleftarrow}
546 \SetBreakableRel{\longrightarrow}
547 \SetBreakableRel{\Longrightarrow}
548 \SetBreakableRel{\longleftrightarrow}
549 \SetBreakableRel{\Longleftrightarrow}
550 \SetBreakableRel{\mapsto}
551 \SetBreakableRel{\longmapsto}
552 \SetBreakableRel{\hookleftarrow}
553 \SetBreakableRel{\hookrightarrow}
554 \SetBreakableRel{\rightleftharpoons}
```

From latexsym.

```
555 \SetBreakableBin{\lhd}
556 \SetBreakableBin{\unlhd}
557 \SetBreakableBin{\rhd}
558 \SetBreakableBin{\unrhd}
559 \SetBreakableRel{\Join}
560 \SetBreakableRel{\leadsto}
561 \SetBreakableRel{\sqsubset}
562 \SetBreakableRel{\sqsupset}
```

amsfonts

```
563 \@ifpackageloaded{amsfonts}% amsfonts
564 {
565   \SetBreakableRel{\dashrightarrow} \SetBreakableRel{\dasharrow}
566   \SetBreakableRel{\dashleftarrow}
567   \SetBreakableRel{\vartriangleright}
568   \SetBreakableRel{\vartriangleleft}
569   \SetBreakableRel{\trianglerighteq}
570   \SetBreakableRel{\trianglelefteq}
571   \SetBreakableRel{\rightsquigarrow} \SetBreakableRel{\leadsto}
572 }{}
```

amssymb

```
573 \@ifpackageloaded{amssymb}% amssymb
574 {
575   \SetBreakableBin{\boxdot}
576   \SetBreakableBin{\boxplus}
577   \SetBreakableBin{\boxtimes}
578   \SetBreakableBin{\centerdot}
579   \SetBreakableBin{\boxminus}
580   \SetBreakableBin{\veebar}
581   \SetBreakableBin{\barwedge}
582   \SetBreakableBin{\doublebarwedge}
```

```
583    \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
584    \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
585    \SetBreakableBin{\curlywedge}
586    \SetBreakableBin{\curlyvee}
587    \SetBreakableBin{\leftthreetimes}
588    \SetBreakableBin{\rightthreetimes}
589    \SetBreakableBin{\dotplus}
590    \SetBreakableBin{\intercal}
591    \SetBreakableBin{\circledcirc}
592    \SetBreakableBin{\circledast}
593    \SetBreakableBin{\circleddash}
594    \SetBreakableBin{\divideontimes}
595    \SetBreakableBin{\lessdot}
596    \SetBreakableBin{\gtrdot}
597    \SetBreakableBin{\ltimes}
598    \SetBreakableBin{\rtimes}
599    \SetBreakableBin{\smallsetminus}
600    \SetBreakableRel{\circlearrowright}
601    \SetBreakableRel{\circlearrowleft}
602    \SetBreakableRel{\leftrightharpoons}
603    \SetBreakableRel{\Vdash}
604    \SetBreakableRel{\Vvdash}
605    \SetBreakableRel{\vDash}
606    \SetBreakableRel{\twoheadrightarrow}
607    \SetBreakableRel{\twoheadleftarrow}
608    \SetBreakableRel{\leftleftarrows}
609    \SetBreakableRel{\rightrightarrows}
610    \SetBreakableRel{\upuparrows}
611    \SetBreakableRel{\downdownarrows}
612    \SetBreakableRel{\upharpoonright} \SetBreakableRel{\restriction}
613    \SetBreakableRel{\downharpoonright}
614    \SetBreakableRel{\upharpoonleft}
615    \SetBreakableRel{\downharpoonleft}
616    \SetBreakableRel{\rightarrowtail}
617    \SetBreakableRel{\leftarrowtail}
618    \SetBreakableRel{\leftrightarrows}
619    \SetBreakableRel{\rightleftarrows}
620    \SetBreakableRel{\Lsh}
621    \SetBreakableRel{\Rsh}
622    \SetBreakableRel{\rightsquigarrow}
623    \SetBreakableRel{\leftrightsquigarrow}
624    \SetBreakableRel{\looparrowleft}
625    \SetBreakableRel{\looparrowright}
626    \SetBreakableRel{\circeq}
627    \SetBreakableRel{\succsim}
628    \SetBreakableRel{\gtrsim}
629    \SetBreakableRel{\gtrapprox}
630    \SetBreakableRel{\multimap}
631    \SetBreakableRel{\therefore}
632    \SetBreakableRel{\because}
633    \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
634    \SetBreakableRel{\triangleq}
635    \SetBreakableRel{\precsim}
636    \SetBreakableRel{\lesssim}
```

```
637    \SetBreakableRel{\lessapprox}
638    \SetBreakableRel{\eqslantless}
639    \SetBreakableRel{\eqslantgtr}
640    \SetBreakableRel{\curlyeqprec}
641    \SetBreakableRel{\curlyeqsucc}
642    \SetBreakableRel{\preccurlyeq}
643    \SetBreakableRel{\leqq}
644    \SetBreakableRel{\leqslant}
645    \SetBreakableRel{\lessgtr}
646    \SetBreakableRel{\risingdotseq}
647    \SetBreakableRel{\fallingdotseq}
648    \SetBreakableRel{\succcurlyeq}
649    \SetBreakableRel{\geqq}
650    \SetBreakableRel{\geqslant}
651    \SetBreakableRel{\gtrless}
652    \SetBreakableRel{\vartriangleright}
653    \SetBreakableRel{\vartriangleleft}
654    \SetBreakableRel{\trianglerighteq}
655    \SetBreakableRel{\trianglelefteq}
656    \SetBreakableRel{\between}
657    \SetBreakableRel{\blacktriangleright}
658    \SetBreakableRel{\blacktriangleleft}
659    \SetBreakableRel{\vartriangle}
660    \SetBreakableRel{\eqcirc}
661    \SetBreakableRel{\lesseqgtr}
662    \SetBreakableRel{\gtreqless}
663    \SetBreakableRel{\lesseqqgtr}
664    \SetBreakableRel{\gtreqqless}
665    \SetBreakableRel{\Rrightarrow}
666    \SetBreakableRel{\Lleftarrow}
667    \SetBreakableRel{\varpropto}
668    \SetBreakableRel{\smallsmile}
669    \SetBreakableRel{\smallfrown}
670    \SetBreakableRel{\Subset}
671    \SetBreakableRel{\Supset}
672    \SetBreakableRel{\subseteqq}
673    \SetBreakableRel{\supseteqq}
674    \SetBreakableRel{\bumpeq}
675    \SetBreakableRel{\Bumpeq}
676    \SetBreakableRel{\lll} \SetBreakableRel{\llless}
677    \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
678    \SetBreakableRel{\pitchfork}
679    \SetBreakableRel{\backsim}
680    \SetBreakableRel{\backsimeq}
681    \SetBreakableRel{\lvertneqq}
682    \SetBreakableRel{\gvertneqq}
683    \SetBreakableRel{\nleq}
684    \SetBreakableRel{\ngeq}
685    \SetBreakableRel{\nless}
686    \SetBreakableRel{\ngtr}
687    \SetBreakableRel{\nprec}
688    \SetBreakableRel{\nsucc}
689    \SetBreakableRel{\lneqq}
690    \SetBreakableRel{\gneqq}
```

```
691    \SetBreakableRel{\nleqslant}
692    \SetBreakableRel{\ngeqslant}
693    \SetBreakableRel{\lneq}
694    \SetBreakableRel{\gneq}
695    \SetBreakableRel{\npreceq}
696    \SetBreakableRel{\nsucceq}
697    \SetBreakableRel{\precnsim}
698    \SetBreakableRel{\succnsim}
699    \SetBreakableRel{\lnsim}
700    \SetBreakableRel{\gnsim}
701    \SetBreakableRel{\nleqq}
702    \SetBreakableRel{\ngeqq}
703    \SetBreakableRel{\precneqq}
704    \SetBreakableRel{\succneqq}
705    \SetBreakableRel{\precnapprox}
706    \SetBreakableRel{\succnapprox}
707    \SetBreakableRel{\lnapprox}
708    \SetBreakableRel{\gnapprox}
709    \SetBreakableRel{\nsim}
710    \SetBreakableRel{\ncong}
711    \SetBreakableRel{\varsubsetneq}
712    \SetBreakableRel{\varsupsetneq}
713    \SetBreakableRel{\nsubseteqq}
714    \SetBreakableRel{\nsupseteqq}
715    \SetBreakableRel{\subsetneqq}
716    \SetBreakableRel{\supsetneqq}
717    \SetBreakableRel{\varsubsetneqq}
718    \SetBreakableRel{\varsupsetneqq}
719    \SetBreakableRel{\subsetneq}
720    \SetBreakableRel{\supsetneq}
721    \SetBreakableRel{\nsubseteq}
722    \SetBreakableRel{\nsupseteq}
723    \SetBreakableRel{\nparallel}
724    \SetBreakableRel{\nmid}
725    \SetBreakableRel{\nshortmid}
726    \SetBreakableRel{\nshortparallel}
727    \SetBreakableRel{\nvdash}
728    \SetBreakableRel{\nVdash}
729    \SetBreakableRel{\nvDash}
730    \SetBreakableRel{\nVDash}
731    \SetBreakableRel{\ntrianglerighteq}
732    \SetBreakableRel{\ntrianglelefteq}
733    \SetBreakableRel{\ntriangleleft}
734    \SetBreakableRel{\ntriangleright}
735    \SetBreakableRel{\nleftarrow}
736    \SetBreakableRel{\nrightarrow}
737    \SetBreakableRel{\nLeftarrow}
738    \SetBreakableRel{\nRightarrow}
739    \SetBreakableRel{\nLeftrightarrow}
740    \SetBreakableRel{\nleftrightarrow}
741    \SetBreakableRel{\eqsim}
742    \SetBreakableRel{\shortmid}
743    \SetBreakableRel{\shortparallel}
744    \SetBreakableRel{\thicksim}
```

```
745    \SetBreakableRel{\thickapprox}
746    \SetBreakableRel{\approxeq}
747    \SetBreakableRel{\succapprox}
748    \SetBreakableRel{\precapprox}
749    \SetBreakableRel{\curvearrowleft}
750    \SetBreakableRel{\curvearrowright}
751    \SetBreakableRel{\backepsilon}
752 }{}
```

amstex

```
753 \@ifpackageloaded{amstex}% amstex
754 {
755    \SetBreakableRel{\vartriangleright}  \SetBreakableRel{\rhd}
756    \SetBreakableRel{\vartriangleleft}   \SetBreakableRel{\lhd}
757    \SetBreakableRel{\trianglerighteq}   \SetBreakableRel{\unrhd}
758    \SetBreakableRel{\trianglelefteq}    \SetBreakableRel{\unlhd}
759    \SetBreakableRel{\rightsquigarrow}   \SetBreakableRel{\leadsto}
760 }{}
```

boisik

```
761 \@ifpackageloaded{boisik}% boisik
762 {
763    \SetMathOperator{\intup}
764    \SetOpenBracket{\binampersand}
765    \SetBreakableRel{\upharpoonright}
766    \SetBreakableRel{\downharpoonright}
767    \SetBreakableRel{\upharpoonleft}
768    \SetBreakableRel{\downharpoonleft}
769    \SetBreakableRel{\leftrightarrows}
770    \SetBreakableRel{\rightleftarrows}
771    \SetBreakableRel{\leftrightharpoons}
772    \SetBreakableRel{\leftleftarrows}
773    \SetBreakableRel{\rightrightarrows}
774    \SetBreakableRel{\upuparrows}
775    \SetBreakableRel{\downdownarrows}
776    \SetBreakableRel{\twoheadrightarrow}
777    \SetBreakableRel{\twoheadleftarrow}
778    \SetBreakableRel{\rightarrowtail}
779    \SetBreakableRel{\leftarrowtail}
780    \SetBreakableRel{\rightsquigarrow}
781    \SetBreakableRel{\leftrightsquigarrow}
782    \SetBreakableRel{\Lsh}
783    \SetBreakableRel{\Rsh}
784    \SetBreakableRel{\looparrowleft}
785    \SetBreakableRel{\looparrowright}
786    \SetBreakableRel{\circlearrowright}
787    \SetBreakableRel{\circlearrowleft}
788    \SetBreakableRel{\curvearrowleft}
789    \SetBreakableRel{\curvearrowright}
790    \SetBreakableRel{\nleftarrow}
791    \SetBreakableRel{\nrightarrow}
792    \SetBreakableRel{\nleftrightarrow}
793    \SetBreakableRel{\nLeftarrow}
794    \SetBreakableRel{\nRightarrow}
795    \SetBreakableRel{\nLeftrightarrow}
```

```
796   \SetBreakableRel{\Lleftarrow}
797   \SetBreakableRel{\Rrightarrow}
798   \SetBreakableRel{\nLeftrightarroW}
799   % \SetBreakableRel{\lhook}
800   % \SetBreakableRel{\rhook}
801   \SetBreakableRel{\multimap}
802   \SetBreakableRel{\multimapdot}
803   \SetBreakableRel{\therefore}
804   \SetBreakableRel{\because}
805   \SetBreakableRel{\between}
806   \SetBreakableRel{\Vdash}
807   \SetBreakableRel{\Vvdash}
808   \SetBreakableRel{\VDash}
809   \SetBreakableRel{\vDash}
810   \SetBreakableRel{\smallsmile}
811   \SetBreakableRel{\smallfrown}
812   \SetBreakableRel{\shortmid}
813   \SetBreakableRel{\shortparallel}
814   \SetBreakableRel{\thickapprox}
815   \SetBreakableBin{\divideontimes}
816   \SetBreakableBin{\lessdot}
817   \SetBreakableBin{\gtrdot}
818   \SetBreakableRel{\bumpeq}
819   \SetBreakableRel{\Bumpeq}
820   \SetBreakableRel{\leqslant}
821   \SetBreakableRel{\geqslant}
822   \SetBreakableRel{\eqslantless}
823   \SetBreakableRel{\eqslantgtr}
824   \SetBreakableRel{\curlyeqprec}
825   \SetBreakableRel{\curlyeqsucc}
826   \SetBreakableRel{\preccurlyeq}
827   \SetBreakableRel{\succcurlyeq}
828   \SetBreakableRel{\thicksim}
829   \SetBreakableRel{\backsim}
830   \SetBreakableRel{\eqsim}
831   \SetBreakableRel{\backsimeq}
832   \SetBreakableBin{\ltimes}
833   \SetBreakableBin{\rtimes}
834   \SetBreakableRel{\lll} \SetBreakableRel{\lllless}
835   \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
836   \SetBreakableRel{\triangleq}
837   \SetBreakableRel{\circeq}
838   \SetBreakableRel{\eqcirc}
839   \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
840   \SetBreakableRel{\risingdotseq}
841   \SetBreakableRel{\fallingdotseq}
842   \SetBreakableRel{\varpropto}
843   \SetBreakableRel{\vartriangleright}
844   \SetBreakableRel{\vartriangleleft}
845   \SetBreakableRel{\trianglerighteq}
846   \SetBreakableRel{\trianglelefteq}
847   \SetBreakableRel{\blacktriangleright}
848   \SetBreakableRel{\blacktriangleleft}
849   \SetBreakableRel{\vartriangle}
```

```
850    \SetBreakableBin{\centerdot}
851    \SetBreakableBin{\boxplus}
852    \SetBreakableBin{\boxminus}
853    \SetBreakableBin{\boxtimes}
854    \SetBreakableBin{\boxdot}
855    \SetBreakableBin{\circledcirc}
856    \SetBreakableBin{\circledast}
857    \SetBreakableBin{\circleddash}
858    \SetBreakableBin{\intercal}
859    \SetBreakableRel{\prurel}
860    \SetBreakableRel{\scurel}
861    \SetBreakableRel{\disin}
862    \SetBreakableRel{\nisd}
863    \SetBreakableRel{\fatslash}
864    \SetBreakableRel{\fatbslash}
865    \SetBreakableRel{\nequiv}
866    \SetBreakableRel{\bagmember}
867    \SetBreakableRel{\lvertneqq}
868    \SetBreakableRel{\gvertneqq}
869    \SetBreakableRel{\nleq}
870    \SetBreakableRel{\ngeq}
871    \SetBreakableRel{\nless}
872    \SetBreakableRel{\ngtr}
873    \SetBreakableRel{\nprec}
874    \SetBreakableRel{\nsucc}
875    \SetBreakableRel{\lneqq}
876    \SetBreakableRel{\gneqq}
877    \SetBreakableRel{\nleqslant}
878    \SetBreakableRel{\ngeqslant}
879    \SetBreakableRel{\lneq}
880    \SetBreakableRel{\gneq}
881    \SetBreakableRel{\npreceq}
882    \SetBreakableRel{\nsucceq}
883    \SetBreakableRel{\nleqq}
884    \SetBreakableRel{\ngeqq}
885    \SetBreakableRel{\lnsim}
886    \SetBreakableRel{\gnsim}
887    \SetBreakableRel{\precnsim}
888    \SetBreakableRel{\succnsim}
889    \SetBreakableRel{\precneqq}
890    \SetBreakableRel{\succneqq}
891    \SetBreakableRel{\nsim}
892    \SetBreakableRel{\ncong}
893    \SetBreakableRel{\lnapprox}
894    \SetBreakableRel{\gnapprox}
895    \SetBreakableRel{\precnapprox}
896    \SetBreakableRel{\succnapprox}
897    \SetBreakableRel{\nsubset}
898    \SetBreakableRel{\nsupset}
899    \SetBreakableRel{\varsubsetneq}
900    \SetBreakableRel{\varsupsetneq}
901    \SetBreakableRel{\nsubseteqq}
902    \SetBreakableRel{\nsupseteqq}
903    \SetBreakableRel{\subsetneqq}
```

```
904    \SetBreakableRel{\supsetneqq}
905    \SetBreakableRel{\varsubsetneqq}
906    \SetBreakableRel{\varsupsetneqq}
907    \SetBreakableRel{\subsetneq}
908    \SetBreakableRel{\supsetneq}
909    \SetBreakableRel{\nsubseteq}
910    \SetBreakableRel{\nsupseteq}
911    \SetBreakableRel{\nparallel}
912    \SetBreakableRel{\nmid}
913    \SetBreakableRel{\nshortmid}
914    \SetBreakableRel{\nshortparallel}
915    \SetBreakableRel{\nvdash}
916    \SetBreakableRel{\nVdash}
917    \SetBreakableRel{\nvDash}
918    \SetBreakableRel{\nVDash}
919    \SetBreakableRel{\ntrianglerighteq}
920    \SetBreakableRel{\ntrianglelefteq}
921    \SetBreakableRel{\ntriangleleft}
922    \SetBreakableRel{\ntriangleright}
923    \SetBreakableRel{\precapprox}
924    \SetBreakableRel{\succapprox}
925    \SetBreakableRel{\precsim}
926    \SetBreakableRel{\succsim}
927    \SetBreakableRel{\lesssim}
928    \SetBreakableRel{\gtrsim}
929    \SetBreakableRel{\lessapprox}
930    \SetBreakableRel{\gtrapprox}
931    \SetBreakableRel{\leqq}
932    \SetBreakableRel{\geqq}
933    \SetBreakableRel{\lessgtr}
934    \SetBreakableRel{\gtrless}
935    \SetBreakableRel{\lesseqgtr}
936    \SetBreakableRel{\gtreqless}
937    \SetBreakableRel{\lesseqqgtr}
938    \SetBreakableRel{\gtreqqless}
939    \SetBreakableRel{\Subset}
940    \SetBreakableRel{\Supset}
941    \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
942    \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
943    \SetBreakableRel{\subseteqq}
944    \SetBreakableRel{\supseteqq}
945    \SetBreakableBin{\curlywedge}
946    \SetBreakableBin{\curlyvee}
947    \SetBreakableBin{\veebar}
948    \SetBreakableBin{\barwedge}
949    \SetBreakableBin{\doublebarwedge}
950    \SetBreakableBin{\leftthreetimes}
951    \SetBreakableBin{\rightthreetimes}
952    \SetBreakableBin{\smallsetminus}
953    \SetBreakableRel{\approxeq}
954    \SetBreakableBin{\dotplus}
955    \SetBreakableRel{\pitchfork}
956    \SetBreakableBin{\oblong}
957    \SetBreakableBin{\talloblong}
```

```
958   \SetBreakableBin{\sslash}
959   \SetBreakableBin{\bbslash}
960   \SetBreakableRel{\hash}
961   \SetBreakableRel{\varhash}
962   \SetBreakableBin{\convolution}
963   \SetBreakableBin{\coAsterisk}
964   \SetBreakableRel{\veeeq}
965   \SetBreakableRel{\corresponds}
966   \SetBreakableRel{\arceq}
967   \SetBreakableRel{\CircledEq}
968   \SetBreakableRel{\eqbumped}
969   \SetBreakableRel{\dotminus}
970   \SetBreakableRel{\kernelcontraction}
971   \SetBreakableRel{\dotsim}
972   \SetBreakableRel{\simrdots}
973   \SetBreakableBin{\circplus}
974   \SetBreakableBin{\dottimes}
975   \SetBreakableBin{\vartimes}
976   \SetBreakableBin{\merge}
977   \SetBreakableBin{\veeonvee}
978   \SetBreakableBin{\obslash}
979   \SetBreakableBin{\otop}
980   \SetBreakableBin{\obot}
981   \SetBreakableBin{\oleft}
982   \SetBreakableBin{\oright}
983   \SetBreakableBin{\obar}
984   \SetBreakableBin{\otriangle}
985   \SetBreakableBin{\olessthan}
986   \SetBreakableBin{\ogreaterthan}
987   \SetBreakableBin{\ovee}
988   \SetBreakableBin{\owedge}
989   \SetBreakableBin{\boxbslash}
990   \SetBreakableBin{\boxtop}
991   \SetBreakableBin{\boxbot}
992   \SetBreakableBin{\boxleft}
993   \SetBreakableBin{\boxright}
994   \SetBreakableBin{\boxbar}
995   \SetBreakableBin{\boxslash}
996   \SetBreakableBin{\boxtriangle}
997   \SetBreakableBin{\boxast}
998   \SetBreakableBin{\boxcircle}
999   \SetBreakableBin{\boxdivision}
1000  \SetBreakableBin{\boxbox}
1001  \SetBreakableBin{\diamondop}
1002  \SetBreakableBin{\diamondminus}
1003  \SetBreakableBin{\diamondbar}
1004  \SetBreakableBin{\diamondtimes}
1005  \SetBreakableBin{\diamondplus}
1006  \SetBreakableBin{\diamondtriangle}
1007  \SetBreakableBin{\diamondcircle}
1008  \SetBreakableBin{\cupleftarrow}
1009  \SetBreakableBin{\varcup}
1010  \SetBreakableBin{\varcap}
1011  \SetBreakableBin{\varsqcup}
```

```
1012    \SetBreakableBin{\varsqcap}
1013    \SetBreakableRel{\sqSubset}
1014    \SetBreakableRel{\sqSupset}
1015    \SetBreakableRel{\inplus}
1016    \SetBreakableRel{\niplus}
1017    \SetBreakableRel{\varisins}
1018    \SetBreakableRel{\varnis}
1019    \SetBreakableRel{\subsetplus}
1020    \SetBreakableRel{\supsetplus}
1021    \SetBreakableRel{\subsetpluseq}
1022    \SetBreakableRel{\supsetpluseq}
1023    \SetBreakableBin{\nplus}
1024    \SetBreakableBin{\squplus}
1025    \SetBreakableRel{\multimapboth}
1026    \SetBreakableRel{\multimapdotboth}
1027    \SetBreakableRel{\multimapdotbothB}
1028    \SetBreakableRel{\multimapdotbothA}
1029    \SetBreakableRel{\multimapinv}
1030    \SetBreakableRel{\multimapdotinv}
1031    \SetBreakableRel{\multimapbothvert}
1032    \SetBreakableRel{\multimapdotbothvert}
1033    \SetBreakableRel{\multimapdotbothBvert}
1034    \SetBreakableRel{\multimapdotbothAvert}
1035    \SetBreakableRel{\dfourier}
1036    \SetBreakableRel{\Dfourier}
1037    \SetBreakableRel{\ztransf}
1038    \SetBreakableRel{\Ztransf}
1039    \SetBreakableRel{\Lt}
1040    \SetBreakableRel{\Gt}
1041    \SetBreakableBin{\leftslice}
1042    \SetBreakableBin{\rightslice}
1043    \SetBreakableRel{\trianglelefteqslant}
1044    \SetBreakableRel{\trianglerighteqslant}
1045    \SetBreakableBin{\Ydown}
1046    \SetBreakableBin{\Yup}
1047    \SetBreakableBin{\Yleft}
1048    \SetBreakableBin{\Yright}
1049    \SetBreakableRel{\dashVv}
1050    \SetBreakableRel{\DashV}
1051    \SetBreakableRel{\DashV}
1052    \SetBreakableRel{\dashV}
1053    \SetBreakableBin{\lbag}
1054    \SetBreakableBin{\rbag}
1055    \SetBreakableRel{\Perp}
1056    \SetBreakableBin{\moo}
1057    \SetBreakableBin{\baro}
1058    \SetBreakableBin{\pluscirc}
1059    \SetBreakableBin{\minuso}
1060    \SetBreakableRel{\llcurly}
1061    \SetBreakableRel{\ggcurly}
1062    \SetBreakableRel{\strictfi}
1063    \SetBreakableRel{\strictif}
1064    \SetBreakableRel{\ac}
1065    \SetBreakableBin{\varintercal}
```

```
1066   \SetBreakableRel{\equalparallel}
1067   \SetBreakableBin{\plustrif}
1068   \SetBreakableBin{\smashtimes}
1069   \SetBreakableRel{\ltcir}
1070   \SetBreakableRel{\gtcir}
1071   \SetBreakableRel{\glj}
1072   \SetBreakableBin{\Vee}
1073   \SetBreakableBin{\Wedge}
1074   \SetBreakableBin{\fatsemi}
1075   \SetBreakableRel{\forkv}
1076   \SetBreakableRel{\topfork}
1077   \SetBreakableRel{\twoheaduparrow}
1078   \SetBreakableRel{\twoheaddownarrow}
1079   \SetBreakableRel{\mapsfrom}
1080   \SetBreakableRel{\mapsup}
1081   \SetBreakableRel{\mapsdown}
1082   \SetBreakableRel{\nVleftarrow}
1083   \SetBreakableRel{\nVrightarrow}
1084   \SetBreakableRel{\rightarrowcircle}
1085   \SetBreakableRel{\nwarrowcorner}
1086   \SetBreakableRel{\nearrowcorner}
1087   \SetBreakableRel{\barovernorthwestarrow}
1088   \SetBreakableRel{\carriagereturn}
1089   \SetBreakableRel{\linefeed}
1090   \SetBreakableRel{\leftzigzagarrow}
1091   \SetBreakableRel{\Nwarrow}
1092   \SetBreakableRel{\Nearrow}
1093   \SetBreakableRel{\Swarrow}
1094   \SetBreakableRel{\Searrow}
1095   \SetBreakableRel{\nHuparrow}
1096   \SetBreakableRel{\nHdownarrow}
1097   \SetBreakableRel{\updownarrowbar}
1098   \SetBreakableRel{\barleftarrow}
1099   \SetBreakableRel{\rightarrowbar}
1100   \SetBreakableRel{\leftsquigarrow}
1101   \SetBreakableRel{\rightsquigarrow}
1102   \SetBreakableRel{\leftrightsquigarrow}
1103   \SetBreakableRel{\downzigzagarrow}
1104   \SetBreakableRel{\rightthreearrows}
1105   \SetBreakableRel{\barleftarrowrightarrowbar}
1106   \SetBreakableRel{\leftdasharrow}
1107   \SetBreakableRel{\rightdasharrow}
1108   \SetBreakableRel{\updasharrow}
1109   \SetBreakableRel{\downdasharrow}
1110   \SetBreakableRel{\upwhitearrow}
1111   \SetBreakableRel{\downwhitearrow}
1112   \SetBreakableRel{\whitearrowupfrombar}
1113   \SetBreakableRel{\whitearrowuppedestal}
1114   \SetBreakableRel{\whitearrowuppedestalhbar}
1115   \SetBreakableRel{\whitearrowuppedestalvbar}
1116   \SetBreakableRel{\twoheadwhiteuparrow}
1117   \SetBreakableRel{\twoheadwhiteuparrowpedestal}
1118   \SetBreakableRel{\updownwhitearrow}
1119   \SetBreakableRel{\leftblackarrow}
```

```
1120    \SetBreakableRel{\rightblackarrow}
1121    \SetBreakableRel{\upblackarrow}
1122    \SetBreakableRel{\downblackarrow}
1123    \SetBreakableRel{\leftrightblackarrow}
1124    \SetBreakableRel{\updownblackarrow}
1125    \SetBreakableRel{\curlyveeuparrow}
1126    \SetBreakableRel{\curlyveedownarrow}
1127    \SetBreakableRel{\curlywedgeuparrow}
1128    \SetBreakableRel{\curlywedgedownarrow}
1129    \SetBreakableRel{\Mapsfrom}
1130    \SetBreakableRel{\Mapsto}
1131    \SetBreakableRel{\leftwhitearrow}
1132    \SetBreakableRel{\rightwhitearrow}
1133    \SetBreakableRel{\leftwhiteroundarrow}
1134    \SetBreakableRel{\rightwhiteroundarrow}
1135    \SetBreakableRel{\righttoleftarrow}
1136    \SetBreakableRel{\lefttorightarrow}
1137    \SetBreakableRel{\looparrowdownleft}
1138    \SetBreakableRel{\looparrowdownright}
1139    \SetBreakableRel{\uptodownarrow}
1140    \SetBreakableRel{\downtouparrow}
1141    \SetBreakableRel{\nnearrow}
1142    \SetBreakableRel{\ssearrow}
1143    \SetBreakableRel{\nnwarrow}
1144    \SetBreakableRel{\sswarrow}
1145    \SetBreakableRel{\curvearrowleft}
1146    \SetBreakableRel{\curvearrowright}
1147    \SetBreakableRel{\curvearrowleftright}
1148    \SetBreakableRel{\curvearrowbotleft}
1149    \SetBreakableRel{\curvearrowbotright}
1150    \SetBreakableRel{\curvearrowbotleftright}
1151    \SetBreakableRel{\leftrightarroweq}
1152    \SetBreakableRel{\eqleftrightarrow}
1153    \SetBreakableRel{\dlsh}
1154    \SetBreakableRel{\drsh}
1155    \SetBreakableRel{\leftarrowTriangle}
1156    \SetBreakableRel{\rightarrowTriangle}
1157    \SetBreakableRel{\leftrightarrowTriangle}
1158    \SetBreakableRel{\leftarrowtriangle}
1159    \SetBreakableRel{\rightarrowtriangle}
1160    \SetBreakableRel{\leftrightarrowtriangle}
1161 }{}
     euler
1162 \@ifpackageloaded{euler}% euler
1163 {
1164    \SetBreakableRel{\uparrow}
1165    \SetBreakableRel{\downarrow}
1166    \SetBreakableRel{\updownarrow}
1167    \SetBreakableRel{\Uparrow}
1168    \SetBreakableRel{\Downarrow}
1169    \SetBreakableRel{\Updownarrow}
1170    % \SetBreakableRel{\lhook}
1171    % \SetBreakableRel{\rhook}
1172 }{}
```

fourier

```
1173 \@ifpackageloaded{fourier}% fourier
1174 {
1175   \SetMathOperator{\iint}
1176   \SetMathOperator{\iiint}
1177   \SetMathOperator{\oiint}
1178   \SetMathOperator{\oiiint}
1179   \SetMathOperator{\slashint}
1180   \SetOpenBracket{\llbracket}
1181   \SetBreakableRel{\leqslant}
1182   \SetBreakableRel{\geqslant}
1183   \SetBreakableRel{\parallelslant}
1184   \SetBreakableRel{\vDash}
1185   \SetBreakableRel{\blacktriangleleft}
1186   \SetBreakableRel{\blacktriangleright}
1187   \SetBreakableRel{\nleqslant}
1188   \SetBreakableRel{\ngeqslant}
1189   \SetBreakableRel{\nparallel}
1190   \SetBreakableRel{\nparallelslant}
1191   \SetBreakableRel{\nvDash}
1192   \SetBreakableBin{\intercal}
1193   \SetBreakableRel{\varsubsetneq}
1194   \SetBreakableRel{\notowns}
1195   \SetBreakableBin{\smallsetminus}
1196   \SetBreakableRel{\subsetneqq}
1197   \SetBreakableRel{\rightrightarrows}
1198   \SetBreakableRel{\leftleftarrows}
1199   \SetBreakableRel{\curvearrowleft}
1200   \SetBreakableRel{\curvearrowright}
1201   \SetBreakableRel{\Downarrow}
1202 }{}
```

Lucida font (lucbmath,lucidabr,lucmin,lucmtime,luctime)

```
1203
1204 \ifnum\@ifpackageloaded{lucbmath}{1}{%
1205 \@ifpackageloaded{lucidabr}{1}{%
1206 \@ifpackageloaded{lucmin}{1}{%
1207 \@ifpackageloaded{lucmtime}{1}{%
1208 \@ifpackageloaded{luctime}{1}{0}}}}}=1\relax%
1209   \SetMathOperator{\surfint}
1210   \SetMathOperator{\midint}
1211   \SetMathOperator{\midoint}
1212   \SetMathOperator{\midsurfint}
1213   \SetMathOperator{\largeint}
1214   \SetBreakableRel{\leadsfrom}
1215   \SetBreakableRel{\defineequal}
1216   \SetBreakableRel{\notequiv}
1217   \SetBreakableRel{\notapprox}
1218   \SetBreakableRel{\notasymp}
1219   \SetBreakableRel{\notsubset}
1220   \SetBreakableRel{\notsupset}
1221   \SetBreakableRel{\notsim}
1222   \SetBreakableRel{\notsubseteq}
1223   \SetBreakableRel{\notsupseteq}
```

```
1224    \SetBreakableRel{\notsimeq}
1225    \SetBreakableRel{\notsqsubseteq}
1226    \SetBreakableRel{\notsqsupseteq}
1227    \SetBreakableRel{\notcong}
1228    \SetBreakableRel{\notni}
1229    \SetBreakableBin{\boxdot}
1230    \SetBreakableBin{\boxplus}
1231    \SetBreakableBin{\boxtimes}
1232    \SetBreakableBin{\centerdot}
1233    \SetBreakableRel{\circlearrowright}
1234    \SetBreakableRel{\circlearrowleft}
1235    \SetBreakableRel{\leftrightharpoons}
1236    \SetBreakableBin{\boxminus}
1237    \SetBreakableRel{\Vdash}
1238    \SetBreakableRel{\Vvdash}
1239    \SetBreakableRel{\vDash}
1240    \SetBreakableRel{\twoheadrightarrow}
1241    \SetBreakableRel{\twoheadleftarrow}
1242    \SetBreakableRel{\leftleftarrows}
1243    \SetBreakableRel{\rightrightarrows}
1244    \SetBreakableRel{\upuparrows}
1245    \SetBreakableRel{\downdownarrows}
1246    \SetBreakableRel{\upharpoonright}
1247    \SetBreakableRel{\downharpoonright}
1248    \SetBreakableRel{\upharpoonleft}
1249    \SetBreakableRel{\downharpoonleft}
1250    \SetBreakableRel{\rightarrowtail}
1251    \SetBreakableRel{\leftarrowtail}
1252    \SetBreakableRel{\leftrightarrows}
1253    \SetBreakableRel{\rightleftarrows}
1254    \SetBreakableRel{\Lsh}
1255    \SetBreakableRel{\Rsh}
1256    \SetBreakableRel{\rightsquigarrow}
1257    \SetBreakableRel{\leftsquigarrow}
1258    \SetBreakableRel{\leftrightsquigarrow}
1259    \SetBreakableRel{\looparrowleft}
1260    \SetBreakableRel{\looparrowright}
1261    \SetBreakableRel{\circeq}
1262    \SetBreakableRel{\succsim}
1263    \SetBreakableRel{\gtrsim}
1264    \SetBreakableRel{\gtrapprox}
1265    \SetBreakableRel{\multimap}
1266    \SetBreakableRel{\image}
1267    \SetBreakableRel{\original}
1268    \SetBreakableRel{\therefore}
1269    \SetBreakableRel{\because}
1270    \SetBreakableRel{\doteqdot}
1271    \SetBreakableRel{\triangleq}
1272    \SetBreakableRel{\precsim}
1273    \SetBreakableRel{\lesssim}
1274    \SetBreakableRel{\lessapprox}
1275    \SetBreakableRel{\eqslantless}
1276    \SetBreakableRel{\eqslantgtr}
1277    \SetBreakableRel{\curlyeqprec}
```

```
1278    \SetBreakableRel{\curlyeqsucc}
1279    \SetBreakableRel{\preccurlyeq}
1280    \SetBreakableRel{\leqq}
1281    \SetBreakableRel{\leqslant}
1282    \SetBreakableRel{\lessgtr}
1283    \SetBreakableRel{\risingdotseq}
1284    \SetBreakableRel{\fallingdotseq}
1285    \SetBreakableRel{\succcurlyeq}
1286    \SetBreakableRel{\geqq}
1287    \SetBreakableRel{\geqslant}
1288    \SetBreakableRel{\gtrless}
1289    \SetBreakableRel{\vartriangleright}
1290    \SetBreakableRel{\vartriangleleft}
1291    \SetBreakableRel{\trianglerighteq}
1292    \SetBreakableRel{\trianglelefteq}
1293    \SetBreakableRel{\between}
1294    \SetBreakableRel{\blacktriangleright}
1295    \SetBreakableRel{\blacktriangleleft}
1296    \SetBreakableRel{\vartriangle}
1297    \SetBreakableRel{\eqcirc}
1298    \SetBreakableRel{\lesseqgtr}
1299    \SetBreakableRel{\gtreqless}
1300    \SetBreakableRel{\lesseqqgtr}
1301    \SetBreakableRel{\gtreqqless}
1302    \SetBreakableRel{\Rrightarrow}
1303    \SetBreakableRel{\Lleftarrow}
1304    \SetBreakableBin{\veebar}
1305    \SetBreakableBin{\barwedge}
1306    \SetBreakableRel{\varpropto}
1307    \SetBreakableRel{\smallsmile}
1308    \SetBreakableRel{\smallfrown}
1309    \SetBreakableRel{\Subset}
1310    \SetBreakableRel{\Supset}
1311    \SetBreakableBin{\Cup}
1312    \SetBreakableBin{\Cap}
1313    \SetBreakableBin{\curlywedge}
1314    \SetBreakableBin{\curlyvee}
1315    \SetBreakableBin{\leftthreetimes}
1316    \SetBreakableBin{\rightthreetimes}
1317    \SetBreakableRel{\subseteqq}
1318    \SetBreakableRel{\supseteqq}
1319    \SetBreakableRel{\bumpeq}
1320    \SetBreakableRel{\Bumpeq}
1321    \SetBreakableRel{\lll}
1322    \SetBreakableRel{\ggg}
1323    \SetBreakableRel{\pitchfork}
1324    \SetBreakableBin{\dotplus}
1325    \SetBreakableRel{\backsim}
1326    \SetBreakableRel{\backsimeq}
1327    \SetBreakableBin{\intercal}
1328    \SetBreakableBin{\circledcirc}
1329    \SetBreakableBin{\circledast}
1330    \SetBreakableBin{\circleddash}
1331    \SetBreakableRel{\lvertneqq}
```

```
1332  \SetBreakableRel{\gvertneqq}
1333  \SetBreakableRel{\nleq}
1334  \SetBreakableRel{\ngeq}
1335  \SetBreakableRel{\nless}
1336  \SetBreakableRel{\ngtr}
1337  \SetBreakableRel{\nprec}
1338  \SetBreakableRel{\nsucc}
1339  \SetBreakableRel{\lneqq}
1340  \SetBreakableRel{\gneqq}
1341  \SetBreakableRel{\nleqslant}
1342  \SetBreakableRel{\ngeqslant}
1343  \SetBreakableRel{\lneq}
1344  \SetBreakableRel{\gneq}
1345  \SetBreakableRel{\npreceq}
1346  \SetBreakableRel{\nsucceq}
1347  \SetBreakableRel{\precnsim}
1348  \SetBreakableRel{\succnsim}
1349  \SetBreakableRel{\lnsim}
1350  \SetBreakableRel{\gnsim}
1351  \SetBreakableRel{\nleqq}
1352  \SetBreakableRel{\ngeqq}
1353  \SetBreakableRel{\precneqq}
1354  \SetBreakableRel{\succneqq}
1355  \SetBreakableRel{\precnapprox}
1356  \SetBreakableRel{\succnapprox}
1357  \SetBreakableRel{\lnapprox}
1358  \SetBreakableRel{\gnapprox}
1359  \SetBreakableRel{\nsim}
1360  \SetBreakableRel{\ncong}
1361  \SetBreakableRel{\diagup}
1362  \SetBreakableRel{\diagdown}
1363  \SetBreakableRel{\varsubsetneq}
1364  \SetBreakableRel{\varsupsetneq}
1365  \SetBreakableRel{\nsubseteqq}
1366  \SetBreakableRel{\nsupseteqq}
1367  \SetBreakableRel{\subsetneqq}
1368  \SetBreakableRel{\supsetneqq}
1369  \SetBreakableRel{\varsubsetneqq}
1370  \SetBreakableRel{\varsupsetneqq}
1371  \SetBreakableRel{\subsetneq}
1372  \SetBreakableRel{\supsetneq}
1373  \SetBreakableRel{\nsubseteq}
1374  \SetBreakableRel{\nsupseteq}
1375  \SetBreakableRel{\nparallel}
1376  \SetBreakableRel{\nmid}
1377  \SetBreakableRel{\nshortmid}
1378  \SetBreakableRel{\nshortparallel}
1379  \SetBreakableRel{\nvdash}
1380  \SetBreakableRel{\nVdash}
1381  \SetBreakableRel{\nvDash}
1382  \SetBreakableRel{\nVDash}
1383  \SetBreakableRel{\ntrianglerighteq}
1384  \SetBreakableRel{\ntrianglelefteq}
1385  \SetBreakableRel{\ntriangleleft}
```

```
1386    \SetBreakableRel{\ntriangleright}
1387    \SetBreakableRel{\nleftarrow}
1388    \SetBreakableRel{\nrightarrow}
1389    \SetBreakableRel{\nLeftarrow}
1390    \SetBreakableRel{\nRightarrow}
1391    \SetBreakableRel{\nLeftrightarrow}
1392    \SetBreakableRel{\nleftrightarrow}
1393    \SetBreakableBin{\divideontimes}
1394    \SetBreakableRel{\eqsim}
1395    \SetBreakableRel{\lessdot}
1396    \SetBreakableRel{\gtrdot}
1397    \SetBreakableBin{\ltimes}
1398    \SetBreakableBin{\rtimes}
1399    \SetBreakableRel{\shortmid}
1400    \SetBreakableRel{\shortparallel}
1401    \SetBreakableBin{\smallsetminus}
1402    \SetBreakableRel{\thicksim}
1403    \SetBreakableRel{\thickapprox}
1404    \SetBreakableRel{\approxeq}
1405    \SetBreakableRel{\succapprox}
1406    \SetBreakableRel{\precapprox}
1407    \SetBreakableRel{\curvearrowleft}
1408    \SetBreakableRel{\curvearrowright}
1409    \SetBreakableRel{\backepsilon}
1410 \fi
```

mathbbol

```
1411 \@ifpackageloaded{mathbbol}% mathbbol
1412 {
1413    \SetOpenBracket{\Langle}
1414    \SetOpenBracket{\Lparen}
1415 }{}
```

mdwmath

```
1416 \@ifpackageloaded{mdwmath}% mdwmath
1417 {
1418    \SetBreakableBin{\bitand}
1419    \begingroup
1420      \catcode`\&\active \xdef&{\noexpand\brokenbin{\mathchar\number\mathcode`\&}}
1421    \endgroup
1422    \AtBeginDocument{\mathcode`\&=32768 }
1423 }{}
```

sbmm

```
1424 \@ifpackageloaded{sbbm}% sbbm
1425 {
1426    \SetOpenBracket{\Lparen}
1427 }{}
```

stmaryrd

```
1428 \@ifpackageloaded{stmaryrd}% stmaryrd
1429 {
1430    \SetOpenBracket{\Lbag}
1431    \SetOpenBracket{\llparenthesis}
1432    \SetOpenBracket{\binampersand}
1433    \SetOpenBracket{\llfloor}
```

```
1434    \SetOpenBracket{\llceil}
1435    \SetOpenBracket{\llbracket}
1436    \SetBreakableRel{shortleftarrow}
1437    \SetBreakableRel{shortrightarrow}
1438    \SetBreakableRel{shortuparrow}
1439    \SetBreakableRel{shortdownarrow}
1440    \SetBreakableBin{Yup}
1441    \SetBreakableBin{Ydown}
1442    \SetBreakableBin{Yleft}
1443    \SetBreakableBin{Yright}
1444    \SetBreakableBin{varcurlyvee}
1445    \SetBreakableBin{varcurlywedge}
1446    \SetBreakableBin{minuso}
1447    \SetBreakableBin{baro}
1448    \SetBreakableBin{sslash}
1449    \SetBreakableBin{bbslash}
1450    \SetBreakableBin{moo}
1451    \SetBreakableBin{varotimes}
1452    \SetBreakableBin{varoast}
1453    \SetBreakableBin{varobar}
1454    \SetBreakableBin{varodot}
1455    \SetBreakableBin{varoslash}
1456    \SetBreakableBin{varobslash}
1457    \SetBreakableBin{varocircle}
1458    \SetBreakableBin{varoplus}
1459    \SetBreakableBin{varominus}
1460    \SetBreakableBin{boxast}
1461    \SetBreakableBin{boxbar}
1462    \SetBreakableBin{boxdot}
1463    \SetBreakableBin{boxslash}
1464    \SetBreakableBin{boxbslash}
1465    \SetBreakableBin{boxcircle}
1466    \SetBreakableBin{boxbox}
1467    \SetBreakableBin{boxempty}
1468    \SetBreakableBin{merge}
1469    \SetBreakableBin{vartimes}
1470    \SetBreakableBin{fatsemi}
1471    \SetBreakableRel{sswarrow}
1472    \SetBreakableRel{ssearrow}
1473    \SetBreakableRel{curlywedgeuparrow}
1474    \SetBreakableRel{curlywedgedownarrow}
1475    \SetBreakableBin{fatslash}
1476    \SetBreakableBin{fatbslash}
1477    \SetBreakableBin{lbag}
1478    \SetBreakableBin{rbag}
1479    \SetBreakableBin{varbigcirc}
1480    \SetBreakableRel{leftrightarroweq}
1481    \SetBreakableRel{curlyveedownarrow}
1482    \SetBreakableRel{curlyveeuparrow}
1483    \SetBreakableRel{nnwarrow}
1484    \SetBreakableRel{nnearrow}
1485    \SetBreakableBin{leftslice}
1486    \SetBreakableBin{rightslice}
1487    \SetBreakableBin{varolessthan}
```

```
1488    \SetBreakableBin{varogreaterthan}
1489    \SetBreakableBin{varovee}
1490    \SetBreakableBin{varowedge}
1491    \SetBreakableBin{talloblong}
1492    \SetBreakableBin{interleave}
1493    \SetBreakableBin{obar}
1494    \SetBreakableBin{obslash}
1495    \SetBreakableBin{olessthan}
1496    \SetBreakableBin{ogreaterthan}
1497    \SetBreakableBin{ovee}
1498    \SetBreakableBin{owedge}
1499    \SetBreakableBin{oblong}
1500    \SetBreakableRel{inplus}
1501    \SetBreakableRel{niplus}
1502    \SetBreakableBin{nplus}
1503    \SetBreakableRel{subsetplus}
1504    \SetBreakableRel{supsetplus}
1505    \SetBreakableRel{subsetpluseq}
1506    \SetBreakableRel{supsetpluseq}
1507    \SetBreakableRel{trianglelefteqslant}
1508    \SetBreakableRel{trianglerighteqslant}
1509    \SetBreakableRel{ntrianglelefteqslant}
1510    \SetBreakableRel{ntrianglerighteqslant}
1511    \SetBreakableRel{arrownot}
1512    \SetBreakableRel{Arrownot}
1513    \SetBreakableRel{Mapstochar}
1514    \SetBreakableRel{mapsfromchar}
1515    \SetBreakableRel{Mapsfromchar}
1516    \SetBreakableBin{leftrightarrowtriangle}
1517    \SetBreakableRel{leftarrowtriangle}
1518    \SetBreakableRel{rightarrowtriangle}
1519    \SetBreakableRel{\longarrownot}
1520    \SetBreakableRel{\Longarrownot}
1521    \SetBreakableRel{\Mapsto}
1522    \SetBreakableRel{\mapsfrom}
1523    \SetBreakableRel{\Mapsfrom}
1524    \SetBreakableRel{\Longmapsto}
1525    \SetBreakableRel{\longmapsfrom}
1526    \SetBreakableRel{\Longmapsfrom}
1527 }{}
     wasysym
1528 \@ifpackageloaded{wasysym}% wasysym
1529 {
1530    \SetMathOperator{\varint}
1531    \SetMathOperator{\iint}
1532    \SetMathOperator{\iiint}
1533    \SetMathOperator{\varoint}
1534    \SetMathOperator{\oiint}
1535    \SetBreakableBin{LHD}
1536    \SetBreakableBin{RHD}
1537    \SetBreakableRel{apprle}
1538    \SetBreakableRel{apprge}
1539    \SetBreakableRel{wasypropto}
1540    \SetBreakableRel{invneg}
```

```
1541    \SetBreakableBin{ocircle}
1542    \SetBreakableRel{logof}
1543 }{}
```