

The `rmathbr` package

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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.

$$\begin{aligned} (a+b)^2 &= a^2 + 2ab + b^2, & a^3 \pm b^3 &= (a \pm b) \times \dots, & \sin^2 \alpha + \cos^2 \alpha &= 1, & t_1 t_2 \cos \theta &= \vec{t}_1 \cdot \vec{t}_2, & x &= 12 \times 10^3, \\ a^2 - b^2 &= (a + b)(a - b), & (1-x)^{-2} &= 1 + 2x + 3x^2 + \dots, & \int x \sin ax \, dx &= \dots \end{aligned}$$

It's recommended to load `rmathbr` after other packages, because of `rmathbr` has special support of many math-related packages: `amsmath`, `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 `mathactive` (12) category to `^` and `_` characters.
- `activechars`: assign `active` (13) 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 \times at break only. E.g. $(a+b)*(a-b)$.

`\cdott`

This command displays `\cdot` (\cdot) that is changed to `\times` (\times) at break.

`\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

- ‘xy’ package: should be loaded after ‘rmathbr’ to work properly
- ‘breqn’ package: cannot work together with ‘rmathbr’

6 Changelog

1.0.2 (23-June-2015)

- fix issue with expanding of math operators

1.0.1 (14-June-2015)

- fix `\cdott`-related issues (thanks to Bruno Le Floch)
- fix some `\SetBreakableRel` and `\SetBreakableBin` declarations
- fix mathematical operators with `\limits` or `\nolimits`

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 (broke 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 `TEX` doesn'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 \RequirePackage{ifetex}
2 \RequirePackage{mathstyle}
3 \@ifpackageloaded{breqn}%
4 {
5   \PackageError{rmathbr}'rmathbr' package cannot be used together with 'breqn' package!{}%
6 }{}
7 \@ifpackageloaded{xy}%
8 {
9   \PackageError{rmathbr}'rmathbr' package should be loaded before 'xy' package!{}%
10 }{}

```

Interface

<code>\nobr</code>	Makes next symbol nonbreakable.
	11 <code>\def\nobr{\penalty\relpenalty}</code>
<code>\SetBreakableBin</code>	Makes breakable binary operation.
	12 <code>\def\SetBreakableBin#1{\rmathbr@setbreakable{#1}{\brokenbin}}</code>
<code>\SetBreakableRel</code>	Makes breakable relation sign.
	13 <code>\def\SetBreakableRel#1{\rmathbr@setbreakable{#1}{\brokenrel}}</code>
<code>\SetBreakableInner</code>	Makes breakable inner (like <code>\ldots</code>).
	14 <code>\def\SetBreakableInner#1{\rmathbr@setbreakable{#1}{\brokeninner}}</code>
<code>\SetOpenBracket</code>	Disables breaks after open bracket.
	15 <code>\def\SetOpenBracket#1{\rmathbr@nobrafter{#1}}</code>
<code>\SetMathOperator</code>	Disables breaks after math operator.
	16 <code>\def\SetMathOperator#1{\rmathbr@setbreakable{#1}{\rmathbr@mathop}}</code>
<code>\SetPunctuation</code>	Disables breaks after punctuation sign.
	17 <code>\def\SetPunctuation#1{\rmathbr@nobrafter{#1}}</code>

Makes argument as breakable binary operation.

```
18 \DeclareRobustCommand{\brokenbin}[1]{\mathbr@brokenbin{#1}}
```

Makes argument as breakable relation sign.

```
19 \DeclareRobustCommand{\brokenrel}[1]{\mathbr@brokenrel{#1}}
```

Makes argument as breakable inner.

```
20 \DeclareRobustCommand{\brokeninner}[1]{\mathbr@brokeninner{#1}}
```

Implementation

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

```
21 \exhyphenpenalty=\relpenalty
```

Disable default breaks.

```
22 \relpenalty=13131
```

```
23 \binoppenalty=14141
```

First symbol in equation is nonbreakable.

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

Setup sub- and superscripts.

```
25 \ifnum\catcode'\^=12%
```

```
26   \begingroup%
```

```
27     \catcode'\^ \active
```

```
28     \global\let\mathbr@superscript@text=^%
```

```
29   \endgroup%
```

```
30 \else%
```

```
31   \let\mathbr@superscript@text=^%
```

```
32 \fi
```

```
33 \ifnum\catcode'\_ =12%
```

```
34   \begingroup%
```

```
35     \catcode'\_ \active
```

```
36     \global\let\mathbr@subscript@text=_%
```

```
37   \endgroup%
```

```
38 \else%
```

```
39   \let\mathbr@subscript@text=_%
```

```
40 \fi
```

```
\mathbr@superscript
```

```
41 \def\mathbr@superscript#1{\mathbr@superscript@text{#1}}
```

```
\mathbr@subscript
```

```
42 \def\mathbr@subscript#1{\mathbr@subscript@text{#1}}
```

```
43 \begingroup
```

```
44   \catcode'\^ \active\gdef^{\mathbr@superscript}
```

```
45   \catcode'\_ \active\gdef_{\mathbr@subscript}
```

```
46 \endgroup
```

Save existing commands.

```
47 \begingroup\catcode'\_ =13\catcode'\^ =13\lowercase{\endgroup
```

```
48 \AtBeginDocument%
```

```
49 {%
```

```

50 \ifnum\catcode'\^=13
51   \let\rmathbr@superscript@text@active=^
52   \DeclareRobustCommand{\rmathbrsuperscript}[1]{\rmathbr@superscript@text@active{#{1}}}
53   \else
54     \DeclareRobustCommand{\rmathbrsuperscript}[1]{\rmathbr@superscript@text{#{1}}}
55   \fi
56   \def^{\rmathbrsuperscript}
57   \def\rmathbr@superscript@macro{\rmathbrsuperscript}
58 \ifnum\catcode'\_ =13
59   \let\rmathbr@subscript@text@active=_
60   \DeclareRobustCommand{\rmathbrsubscript}[1]{\rmathbr@subscript@text@active{#{1}}}
61   \else
62     \DeclareRobustCommand{\rmathbrsubscript}[1]{\rmathbr@subscript@text{#{1}}}
63   \fi
64   \def_{\rmathbrsubscript}
65   \def\rmathbr@subscript@macro{\rmathbrsubscript}
66 }}

```

Process options.

```

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

```

Basic math.

```

81 \begingroup
82   \catcode'\=\active
83   \ifnum\mathcode'\<32768
84     \xdef={\noexpand\brokenbin{\mathchar\number\mathcode'\=}}
85   \else
86     \gdef={\brokenbin{\mathchar12349}}
87   \fi
88 \endgroup
89 \begingroup
90   \catcode'\+\active
91   \ifnum\mathcode'\+\<32768
92     \xdef+{\noexpand\brokenbin{\mathchar\number\mathcode'\+}}
93   \else
94     \gdef+{\brokenbin{\mathchar8235}}
95   \fi
96 \endgroup
97 \begingroup
98   \catcode'\-\active
99   \ifnum\mathcode'\-\<32768
100   \xdef-{\noexpand\brokenbin{\mathchar\number\mathcode'\-}}

```

```

101 \else
102   \gdef-\{brokenbin{\mathchar8704}}
103 \fi
104 \endgroup
105 \begingroup
106 \catcode'\*\active
107 \ifnum\mathcode'\* < 32768
108   \xdef*{\noexpand\brokenbin{\mathchar\number\mathcode'\*}}
109 \else
110   \gdef*{\brokenbin{\mathchar8707}}
111 \fi
112 \endgroup
113 \begingroup
114 \ifnum\mathcode'\< < 32768
115   \catcode'\<\active
116   \xdef<{\noexpand\brokenbin{\mathchar\number\mathcode'\<}}
117 \else
118   \catcode'\<\active
119   \gdef<{\brokenbin{\mathchar12604}}
120 \fi
121 \endgroup
122 \begingroup
123 \catcode'\>\active
124 \ifnum\mathcode'\> < 32768
125   \xdef>{\noexpand\brokenbin{\mathchar\number\mathcode'\>}}
126 \else
127   \gdef>{\brokenbin{\mathchar12606}}
128 \fi
129 \endgroup
130 \begingroup
131 \catcode'\(\active
132 \xdef({{\mathopen\delimiter\number\delcode'\(\noexpand\nobr }
133 \endgroup
134 \begingroup
135 \catcode'\[ \active %\]
136 \xdef[{{\mathopen\delimiter\number\delcode'\[\noexpand\nobr }
137 \endgroup
138 \AtBeginDocument%
139 {
140   \mathcode'\==32768% "8000
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   \mathcode'\, =32768
152   \mathcode'\; =32768
153   \let\rmathbr@orig@resetMathstrut=\resetMathstrut@
154 \begingroup

```

```

155 \gdef\resetMathstrut@
156 {
157   \mathcode'\(=16424% "4028
158   \rmathbr@orig@resetMathstrut
159   \mathcode'\(=32768% "8000
160 }
161 \gdef\newmcodes@
162 {
163   \mathcode'\ '=39
164   \mathcode'\ *=42
165   \mathcode'\ .=24890% "613A
166   \mathcode'\ -=45
167   \mathcode'\ /=47
168   \mathcode'\ :=24634% "603A
169   \relax
170 }
171 \endgroup%
172 }
173 \begingroup
174 \catcode'\:\active \gdef:{\futurelet\rmathbr@let@token\rmathbr@colontest}
175 \endgroup

```

`\rmathbr@colontest` Check for `:=`.

```

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

```

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

```

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

```



```

205   \fi
206   }
207 \endgroup
      Check for 'program' package.
208 \begingroup
209   \catcode'\; \active
210   \@ifpackageloaded{program}%
211   {
212     \gdef;\{\ifmmode\semicolon\;\noobr\else\@semicolon\fi}
213   }{
214     \ifnum\mathcode'\;<32768
215       \xdef;\{\mathpunct\mathchar\number\mathcode'\;\noexpand\nobr }
216     \else
217       \gdef;\{\mathpunct\mathchar24635\nobr }
218     \fi
219   }
220 \endgroup

```

`\mathbr@ReDeclareRobustCommand`

```

221 \def\rmathbr@ReDeclareRobustCommand#1#2% Command without arguments
222 {
223   \begingroup
224   \ifx#1\undefined
225   \else
226     \edef\var@orig@I{\rmathbr@orig@\expandafter\@gobble\string#1}
227     \edef\var@Ispace{\expandafter\@gobble\string#1 }
228     \expandafter\ifx\csname\var@orig@I\endcsname\relax
229     \expandafter\ifx\csname\var@Ispace\endcsname\relax
230     \global\expandafter\let\csname\var@orig@I\endcsname#1
231   \else
232     \global\expandafter\let\csname\var@orig@I\expandafter\endcsname\csname\var@Ispace\er
233   \fi
234   \fi
235   \expandafter\gdef\csname\var@Ispace\endcsname{#2}% no arguments
236   \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
237   \fi
238 \endgroup%
239 }

```

`\mathbr@ReDeclareRobustCommandI`

```

240 \def\rmathbr@ReDeclareRobustCommandI#1#2% Command with one argument
241 {
242   \begingroup
243   \ifx#1\undefined
244   \else
245     \edef\var@orig@I{\rmathbr@orig@\expandafter\@gobble\string#1}
246     \edef\var@Ispace{\expandafter\@gobble\string#1 }
247     \expandafter\ifx\csname\var@orig@I\endcsname\relax
248     \expandafter\ifx\csname\var@Ispace\endcsname\relax
249     \global\expandafter\let\csname\var@orig@I\endcsname#1
250   \else
251     \global\expandafter\let\csname\var@orig@I\expandafter\endcsname\csname\var@Ispace\er
252   \fi

```

```

253     \fi
254     \expandafter\gdef\csname\var@Ispace\endcsname##1{#2}% one argument
255     \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
256     \fi
257 \endgroup%
258 }

```

`\rmathbr@setbrokens`

```

259 \def\rmathbr@setbrokens%
260 {
261   \rmathbr@ReDeclareRobustCommandI{\brokenbin}{\rmathbr@brokenbin{##1}}
262   \rmathbr@ReDeclareRobustCommandI{\brokenrel}{\rmathbr@brokenrel{##1}}
263   \rmathbr@ReDeclareRobustCommandI{\brokeninner}{\rmathbr@brokeninner{##1}}%
264 }

```

`\rmathbr@unsetbrokens`

```

265 \def\rmathbr@unsetbrokens%
266 {
267   \def\brokenbin##1{##1}
268   \def\brokenrel##1{##1}
269   \def\brokeninner##1{##1}%
270 }

```

`\rmathbr@brokenbin`

```

271 \def\rmathbr@brokenbin#1%
272 {
273   \relax
274   \def\rmathbr@arg{#1}
275   \def\rmathbr@this{\rmathbr@brokenbin}
276   \def\rmathbr@output{\rmathbr@@brokenbin}
277   \futurelet\rmathbr@let@token\rmathbr@brokenop%
278 }

```

`\rmathbr@brokenrel`

```

279 \def\rmathbr@brokenrel#1%
280 {
281   \relax
282   \def\rmathbr@arg{#1}
283   \def\rmathbr@this{\rmathbr@brokenrel}
284   \def\rmathbr@output{\rmathbr@@brokenrel}
285   \futurelet\rmathbr@let@token\rmathbr@brokenop%
286 }

```

`\rmathbr@brokeninner`

```

287 \def\rmathbr@brokeninner#1%
288 {
289   \relax
290   \def\rmathbr@arg{#1}
291   \def\rmathbr@this{\rmathbr@brokeninner}
292   \def\rmathbr@output{\rmathbr@@brokeninner}
293   \futurelet\rmathbr@let@token\rmathbr@brokenop%
294 }

```

`\rmathbr@mathop`

```

295 \def\rmathbr@mathop#1%
296 {
297   \relax
298   \def\rmathbr@arg{#1}
299   \def\rmathbr@this{\rmathbr@mathop}
300   \def\rmathbr@output{\rmathbr@mathop}
301   \futurelet\rmathbr@let@token\rmathbr@brokenop%
302 }

```

`\rmathbr@@brokenbin`

```

303 \def\rmathbr@@brokenbin#1%
304 {
305   \ifnum\lastpenalty=\relpenalty
306     \mathbin{#1}
307   \else
308     \mathbin{#1}
309     \ifx$\rmathbr@let@token
310       \else
311         \rmathbr@selector{#1}
312       \fi
313     \fi
314     \rmathbr@setbrokens
315     \penalty\binoppenalty %
316 }

```

`\rmathbr@@brokenrel`

```

317 \def\rmathbr@@brokenrel#1%
318 {
319   \ifnum\lastpenalty=\relpenalty
320     \mathrel{#1}
321   \else
322     \mathrel{#1}
323     \ifx$\rmathbr@let@token
324       \else
325         \rmathbr@selector{#1}
326       \fi
327     \fi
328     \rmathbr@setbrokens
329     \penalty\relpenalty %
330 }

```

`\rmathbr@@brokeninner`

```

331 \def\rmathbr@@brokeninner#1%
332 {
333   \ifnum\lastpenalty=\relpenalty
334     \mathinner{#1}
335   \else
336     \mathinner{#1}
337     \ifx$\rmathbr@let@token
338       \else
339         \rmathbr@selector{#1}
340       \fi
341     \fi

```

```

342 \rmathbr@setbrokens
343 \penalty\relpenalty %
344 }

```

`\rmathbr@@mathop`

```

345 \def\rmathbr@@mathop#1%
346 {
347   \rmathbr@setbrokens
348   #1\nobr %
349 }

```

`\rmathbr@selector`

```

350 \def\rmathbr@selector#1%
351 {
352   \mathchoice
353     {\discretionary}{\hbox{\m@th\displaystyle#1$}}{}}
354     {\discretionary}{\hbox{\m@th\textstyle#1$}}{}}
355     {\discretionary}{\hbox{\m@th\scriptstyle#1$}}{}}
356     {\discretionary}{\hbox{\m@th\scriptscriptstyle#1$}}{}}%
357 }

358 \begingroup\catcode'\_ =12\catcode'\^ =12

```

`\rmathbr@brokenop`

```

359 \gdef\rmathbr@brokenop%
360 {
361   \ifmode
362     \rmathbr@unsetbrokens
363     \ifx\rmathbr@subscript@macro\rmathbr@let@token
364       \let\@command=\rmathbr@brokenglue
365     \else\ifx_\rmathbr@let@token
366       \let\@command=\rmathbr@brokenglue
367     \else\ifx\rmathbr@superscript@macro\rmathbr@let@token
368       \let\@command=\rmathbr@brokenglue
369     \else\ifx^\rmathbr@let@token
370       \let\@command=\rmathbr@brokenglue
371     \else\ifx\limits\rmathbr@let@token
372       \let\@command=\rmathbr@brokenskip
373     \else\ifx\nolimits\rmathbr@let@token
374       \let\@command=\rmathbr@brokenskip
375     \else\ifx\relax\rmathbr@let@token
376       \let\@command=\rmathbr@brokenskip
377     \else
378       \let\@command=\rmathbr@output
379     \fi\fi\fi\fi\fi\fi\fi
380   \else
381     \let\@command=\relax
382   \fi
383   \expandafter\@command\expandafter{\rmathbr@arg}%
384 }

385 \endgroup

```

`\rmathbr@brokenglue`

```

386 \def\rmathbr@brokenglue#1#2#3%
387 {
388   \def\rmathbr@temp{#1#2{#3}}
389   \expandafter\rmathbr@this\expandafter{\rmathbr@temp}%
390 }

```

`\rmathbr@brokenskip`

```

391 \def\rmathbr@brokenskip#1#2%
392 {
393   \def\rmathbr@temp{#1#2}
394   \expandafter\rmathbr@this\expandafter{\rmathbr@temp}%
395 }

```

`\rmathbr@setbreakable`

```

396 \def\rmathbr@setbreakable#1#2%
397 {
398   \begingroup
399     \ifx#1\undefined
400     \else
401       \edef\rmathbr@orig{\rmathbr@orig@\expandafter\@gobble\string#1}
402       \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
403         \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{\expandafter#2\@}
404       \fi
405     \fi
406   \endgroup%
407 }

```

`\rmathbr@nobrafter`

```

408 \def\rmathbr@nobrafter#1%
409 {
410   \begingroup
411     \ifx#1\undefined
412     \else
413       \edef\rmathbr@orig{\rmathbr@orig@\expandafter\@gobble\string#1}
414       \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
415         \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{\csname\rmathbr@orig\endcsname}
416       \fi
417     \fi
418   \endgroup%
419 }

```

Redeclaration of math signs

Redeclare `\not`.

```

420 \rmathbr@ReDeclareRobustCommandI{\not}%
421 {
422   \begingroup
423     \edef\rmathbr@orig{\rmathbr@orig@\expandafter\@gobble\string#1}
424     \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
425       \brokenrel{\rmathbr@orig@not#1}
426     \else
427       \expandafter\brokenrel\expandafter{\expandafter\rmathbr@orig@not\csname\rmathbr@orig\endcsname}
428     \fi

```

```
429 \endgroup%
430 }
```

Open brackets.

```
431 \mathbr@ReDeclareRobustCommandI{\bigl}{\mathopen\big#1\nobr}
432 \mathbr@ReDeclareRobustCommandI{\Bigl}{\mathopen\Big#1\nobr}
433 \mathbr@ReDeclareRobustCommandI{\biggl}{\mathopen\bigg#1\nobr}
434 \mathbr@ReDeclareRobustCommandI{\Biggl}{\mathopen\Bigg#1\nobr}
435 \SetOpenBracket{\lmoustache}
436 \SetOpenBracket{\langle}
437 \SetOpenBracket{\lbrace}
438 \SetOpenBracket{\lceil}
439 \SetOpenBracket{\lfloor}
440 \SetOpenBracket{\lgroup}
441 \SetOpenBracket{\lvert}
442 \SetOpenBracket{\lVert}
443 \SetOpenBracket{\ulcorner}
444 \SetOpenBracket{\llcorner}
445 \SetOpenBracket{\Lbrack}
```

Math operators.

```
446 \SetMathOperator{\coprod}
447 \SetMathOperator{\bigvee}
448 \SetMathOperator{\bigwedge}
449 \SetMathOperator{\biguplus}
450 \SetMathOperator{\bigcap}
451 \SetMathOperator{\bigcup}
452 \SetMathOperator{\int}
453 \SetMathOperator{\prod}
454 \SetMathOperator{\sum}
455 \SetMathOperator{\bigotimes}
456 \SetMathOperator{\bigoplus}
457 \SetMathOperator{\bigodot}
458 \SetMathOperator{\oint}
459 \SetMathOperator{\bigsqcup}
460 \SetMathOperator{\smallint}
```

Punctuations.

```
461 \SetPunctuation{\ldotp}
462 \SetPunctuation{\cdotp}
463 \SetPunctuation{\colon}
464 \SetPunctuation{\period}
```

Binary Operations.

```
465 \SetBreakableBin{\triangleleft}
466 \SetBreakableBin{\triangleright}
467 \SetBreakableBin{\bigtriangleup}
468 \SetBreakableBin{\bigtriangledown}
469 \SetBreakableBin{\wedge} \SetBreakableBin{\land}
470 \SetBreakableBin{\vee} \SetBreakableBin{\lor}
471 \SetBreakableBin{\cap}
472 \SetBreakableBin{\cup}
473 \SetBreakableBin{\ddagger}
474 \SetBreakableBin{\dagger}
475 \SetBreakableBin{\sqcap}
476 \SetBreakableBin{\sqcup}
```

```

477 \SetBreakableBin{\uplus}
478 \SetBreakableBin{\amalg}
479 \SetBreakableBin{\diamond}
480 \SetBreakableBin{\bullet}
481 \SetBreakableBin{\wr}
482 \SetBreakableBin{\div}
483 \SetBreakableBin{\odot}
484 \SetBreakableBin{\oslash}
485 \SetBreakableBin{\otimes}
486 \SetBreakableBin{\ominus}
487 \SetBreakableBin{\oplus}
488 \SetBreakableBin{\mp}
489 \SetBreakableBin{\pm}
490 \SetBreakableBin{\circ}
491 \SetBreakableBin{\bigcirc}
492 \SetBreakableBin{\setminus}
493 \SetBreakableBin{\ast}
494 \SetBreakableBin{\star}
495 \SetBreakableBin{\times}
496 \SetBreakableBin{\cdot}

```

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

```

497 \def\rmathbr@cdott{%
498   %% inplace-expanded mathchoice from mathstyle.sty
499   \mathchoice{%
500     \mkern\medmuskip$%
501     \discretionary{\the\textfont2\char2}{\the\textfont2\char2}{\the\textfont2\char1}%
502     $\displaystyle\mkern\medmuskip%
503   }{%
504     \mkern\medmuskip$%
505     \discretionary{\the\textfont2\char2}{\the\textfont2\char2}{\the\textfont2\char1}%
506     $\textstyle\mkern\medmuskip%
507   }{%
508     $%
509     \discretionary{\the\scriptfont2\char2}{\the\scriptfont2\char2}{\the\scriptfont2\char1}%
510     $\scriptstyle%
511   }{%
512     $%
513     \discretionary{\the\scriptscriptfont2\char2}{\the\scriptscriptfont2\char2}{\the\scriptscriptfont2\char1}%
514     $\scriptscriptstyle%
515   }
516 }
517 \def\cdott{%
518   \ensuremath
519   \ifetex
520     \ifinner%
521       \ifnum\currentgrouptype=15\relax
522         \rmathbr@cdott
523       \else
524         \cdot
525       \fi
526     \else
527       \cdot
528     \fi

```

```

529 \else
530 \rmathbr@cdott
531 \fi
532 }

\*
533 \def\*\{\mathbin{}}%
534 \mathchoice{%
535 \discretionary{\hbox{$\m@th\displaystyle\times$}}{\hbox{$\m@th\displaystyle\times$}}{}%
536 }{%
537 \discretionary{\hbox{$\m@th\textstyle\times$}}{\hbox{$\m@th\textstyle\times$}}{}%
538 }{%
539 \discretionary{\hbox{$\m@th\scriptstyle\times$}}{\hbox{$\m@th\scriptstyle\times$}}{}%
540 }{%
541 \discretionary{\hbox{$\m@th\scriptscriptstyle\times$}}{\hbox{$\m@th\scriptscriptstyle\times$}}{}%
542 }%
543 \penalty\binoppenalty%
544 }

```

Relations.

```

545 \SetBreakableRel{\propto}
546 \SetBreakableRel{\sqsubseteq}
547 \SetBreakableRel{\sqsupseteq}
548 \SetBreakableRel{\parallel}
549 \SetBreakableRel{\mid}
550 \SetBreakableRel{\dashv}
551 \SetBreakableRel{\vdash}
552 \SetBreakableRel{\leq} \SetBreakableRel{\le}
553 \SetBreakableRel{\geq} \SetBreakableRel{\ge}
554 \SetBreakableRel{\succ}
555 \SetBreakableRel{\prec}
556 \SetBreakableRel{\approx}
557 \SetBreakableRel{\succeq}
558 \SetBreakableRel{\preceq}
559 \SetBreakableRel{\supset}
560 \SetBreakableRel{\subset}
561 \SetBreakableRel{\supseteq}
562 \SetBreakableRel{\subseteq}
563 \SetBreakableRel{\in}
564 \SetBreakableRel{\ni} \SetBreakableRel{\owns}
565 \SetBreakableRel{\gg}
566 \SetBreakableRel{\ll}
567 \SetBreakableRel{\sim}
568 \SetBreakableRel{\simeq}
569 \SetBreakableRel{\perp}
570 \SetBreakableRel{\equiv}
571 \SetBreakableRel{\asymp}
572 \SetBreakableRel{\smile}
573 \SetBreakableRel{\frown}
574 \SetBreakableRel{\models}
575 \SetBreakableRel{\cong}
576 \SetBreakableRel{\notin}
577 \SetBreakableRel{\doteq}
578 \SetBreakableRel{\bowtie}

```



```

579 \SetBreakableRel{\neq} % Works well without \SetBreakableRel
580 \SetBreakableRel{\ne} % Works well without \SetBreakableRel

Arrows.

581 \SetBreakableRel{\nearrow}
582 \SetBreakableRel{\searrow}
583 \SetBreakableRel{\nwarrow}
584 \SetBreakableRel{\swarrow}
585 \SetBreakableRel{\Leftrightarrow}
586 \SetBreakableRel{\Leftarrow}
587 \SetBreakableRel{\Rightarrow}
588 \SetBreakableRel{\leftrightharpoonup}
589 \SetBreakableRel{\leftarrow} \SetBreakableRel{\gets}
590 \SetBreakableRel{\rightarrow} \SetBreakableRel{\to}
591 \SetBreakableRel{\leftharpoonup}
592 \SetBreakableRel{\leftharpoondown}
593 \SetBreakableRel{\rightharpoonup}
594 \SetBreakableRel{\rightharpoondown}
595 \SetBreakableRel{\longleftarrow}
596 \SetBreakableRel{\Longleftarrow}
597 \SetBreakableRel{\longrightarrow}
598 \SetBreakableRel{\Longrightarrow}
599 \SetBreakableRel{\longleftrightharpoonup}
600 \SetBreakableRel{\Longleftrightharpoonup}
601 \SetBreakableRel{\mapsto}
602 \SetBreakableRel{\longmapsto}
603 \SetBreakableRel{\hookrightarrow}
604 \SetBreakableRel{\hookleftarrow}
605 \SetBreakableRel{\rightleftharpoons}

From latexsym.

606 \SetBreakableBin{\lhd}
607 \SetBreakableBin{\unlhd}
608 \SetBreakableBin{\rhd}
609 \SetBreakableBin{\unrhd}
610 \SetBreakableRel{\Join}
611 \SetBreakableRel{\leadsto}
612 \SetBreakableRel{\sqsubset}
613 \SetBreakableRel{\sqsupset}

amsmath
614 \@ifpackageloaded{amsmath}% amsmath
615 {
616 \SetBreakableRel{\dashrightarrow} \SetBreakableRel{\dasharrow}
617 \SetBreakableRel{\dashleftarrow}
618 \SetBreakableRel{\vartriangleright}
619 \SetBreakableRel{\vartriangleleft}
620 \SetBreakableRel{\trianglerighteq}
621 \SetBreakableRel{\trianglelefteq}
622 \SetBreakableRel{\rightsquigarrow} \SetBreakableRel{\leadsto}
623 }{}

amssymb
624 \@ifpackageloaded{amssymb}% amssymb
625 {
626 \SetBreakableBin{\boxdot}

```

```

627 \SetBreakableBin{\boxplus}
628 \SetBreakableBin{\boxtimes}
629 \SetBreakableBin{\centerdot}
630 \SetBreakableBin{\boxminus}
631 \SetBreakableBin{\veebar}
632 \SetBreakableBin{\barwedge}
633 \SetBreakableBin{\doublebarwedge}
634 \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
635 \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
636 \SetBreakableBin{\curlywedge}
637 \SetBreakableBin{\curlyvee}
638 \SetBreakableBin{\leftthreetimes}
639 \SetBreakableBin{\rightthreetimes}
640 \SetBreakableBin{\dotplus}
641 \SetBreakableBin{\intercal}
642 \SetBreakableBin{\circledcirc}
643 \SetBreakableBin{\circledast}
644 \SetBreakableBin{\circleddash}
645 \SetBreakableBin{\divideontimes}
646 \SetBreakableBin{\lessdot}
647 \SetBreakableBin{\gtrdot}
648 \SetBreakableBin{\ltimes}
649 \SetBreakableBin{\rtimes}
650 \SetBreakableBin{\smallsetminus}
651 \SetBreakableRel{\circlearrowright}
652 \SetBreakableRel{\circlearrowleft}
653 \SetBreakableRel{\leftrightharpoons}
654 \SetBreakableRel{\Vdash}
655 \SetBreakableRel{\Vvdash}
656 \SetBreakableRel{\vDash}
657 \SetBreakableRel{\twoheadrightarrow}
658 \SetBreakableRel{\twoheadleftarrow}
659 \SetBreakableRel{\leftleftarrows}
660 \SetBreakableRel{\rightrightarrows}
661 \SetBreakableRel{\upuparrows}
662 \SetBreakableRel{\downdownarrows}
663 \SetBreakableRel{\upharpoonright} \SetBreakableRel{\restriction}
664 \SetBreakableRel{\downharpoonright}
665 \SetBreakableRel{\upharpoonleft}
666 \SetBreakableRel{\downharpoonleft}
667 \SetBreakableRel{\rightarrowtail}
668 \SetBreakableRel{\leftarrowtail}
669 \SetBreakableRel{\leftrightarrows}
670 \SetBreakableRel{\rightleftarrows}
671 \SetBreakableRel{\Lsh}
672 \SetBreakableRel{\Rsh}
673 \SetBreakableRel{\rightsquigarrow}
674 \SetBreakableRel{\leftrightsquigarrow}
675 \SetBreakableRel{\looparrowleft}
676 \SetBreakableRel{\looparrowright}
677 \SetBreakableRel{\circeq}
678 \SetBreakableRel{\succsim}
679 \SetBreakableRel{\gtrsim}
680 \SetBreakableRel{\gtrapprox}

```

```

681 \SetBreakableRel{\multimap}
682 \SetBreakableRel{\therefore}
683 \SetBreakableRel{\because}
684 \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
685 \SetBreakableRel{\triangleq}
686 \SetBreakableRel{\precsim}
687 \SetBreakableRel{\lessim}
688 \SetBreakableRel{\lessapprox}
689 \SetBreakableRel{\eqslantless}
690 \SetBreakableRel{\eqslantgtr}
691 \SetBreakableRel{\curlyeqprec}
692 \SetBreakableRel{\curlyeqsucc}
693 \SetBreakableRel{\preccurlyeq}
694 \SetBreakableRel{\leqq}
695 \SetBreakableRel{\leqslant}
696 \SetBreakableRel{\lessgtr}
697 \SetBreakableRel{\risingdotseq}
698 \SetBreakableRel{\fallingdotseq}
699 \SetBreakableRel{\succcurlyeq}
700 \SetBreakableRel{\geqq}
701 \SetBreakableRel{\geqslant}
702 \SetBreakableRel{\gtrless}
703 \SetBreakableRel{\vartriangleright}
704 \SetBreakableRel{\vartriangleleft}
705 \SetBreakableRel{\trianglerighteq}
706 \SetBreakableRel{\trianglelefteq}
707 \SetBreakableRel{\between}
708 \SetBreakableRel{\blacktriangleright}
709 \SetBreakableRel{\blacktriangleleft}
710 \SetBreakableRel{\vartriangle}
711 \SetBreakableRel{\eqcirc}
712 \SetBreakableRel{\lesseqgtr}
713 \SetBreakableRel{\gtreqless}
714 \SetBreakableRel{\lesseqqgtr}
715 \SetBreakableRel{\gtreqqless}
716 \SetBreakableRel{\Rrightarrow}
717 \SetBreakableRel{\Lleftarrow}
718 \SetBreakableRel{\varpropto}
719 \SetBreakableRel{\smallsmile}
720 \SetBreakableRel{\smallfrown}
721 \SetBreakableRel{\Subset}
722 \SetBreakableRel{\Supset}
723 \SetBreakableRel{\subseteqq}
724 \SetBreakableRel{\supseteqq}
725 \SetBreakableRel{\bumpeq}
726 \SetBreakableRel{\Bumpeq}
727 \SetBreakableRel{\lll} \SetBreakableRel{\llless}
728 \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
729 \SetBreakableRel{\pitchfork}
730 \SetBreakableRel{\backsimeq}
731 \SetBreakableRel{\backsimeq}
732 \SetBreakableRel{\lvertneqq}
733 \SetBreakableRel{\gvertneqq}
734 \SetBreakableRel{\nleq}

```

```

735 \SetBreakableRel{\ngeq}
736 \SetBreakableRel{\nless}
737 \SetBreakableRel{\ngtr}
738 \SetBreakableRel{\nprec}
739 \SetBreakableRel{\nsucc}
740 \SetBreakableRel{\lneqq}
741 \SetBreakableRel{\gneqq}
742 \SetBreakableRel{\nleqslant}
743 \SetBreakableRel{\ngeqslant}
744 \SetBreakableRel{\lneq}
745 \SetBreakableRel{\gneq}
746 \SetBreakableRel{\npreceq}
747 \SetBreakableRel{\nsucceq}
748 \SetBreakableRel{\precnsim}
749 \SetBreakableRel{\succnsim}
750 \SetBreakableRel{\lnsim}
751 \SetBreakableRel{\gnsim}
752 \SetBreakableRel{\nleqq}
753 \SetBreakableRel{\ngeqq}
754 \SetBreakableRel{\precneqq}
755 \SetBreakableRel{\succneqq}
756 \SetBreakableRel{\precnapprox}
757 \SetBreakableRel{\succnapprox}
758 \SetBreakableRel{\lnapprox}
759 \SetBreakableRel{\gnapprox}
760 \SetBreakableRel{\nsim}
761 \SetBreakableRel{\ncong}
762 \SetBreakableRel{\varsubsetneq}
763 \SetBreakableRel{\varsupsetneq}
764 \SetBreakableRel{\nsubseteqqq}
765 \SetBreakableRel{\nsupseteqqq}
766 \SetBreakableRel{\subseteqqq}
767 \SetBreakableRel{\supseteqqq}
768 \SetBreakableRel{\varsubsetneqq}
769 \SetBreakableRel{\varsupsetneqq}
770 \SetBreakableRel{\subseteq}
771 \SetBreakableRel{\supseteq}
772 \SetBreakableRel{\nsubseteq}
773 \SetBreakableRel{\nsupseteq}
774 \SetBreakableRel{\nparallel}
775 \SetBreakableRel{\nmid}
776 \SetBreakableRel{\nshortmid}
777 \SetBreakableRel{\nshortparallel}
778 \SetBreakableRel{\nvdash}
779 \SetBreakableRel{\nVdash}
780 \SetBreakableRel{\nvDash}
781 \SetBreakableRel{\nVDash}
782 \SetBreakableRel{\ntrianglerighteq}
783 \SetBreakableRel{\ntrianglelefteq}
784 \SetBreakableRel{\ntriangleleft}
785 \SetBreakableRel{\ntriangleright}
786 \SetBreakableRel{\nleftarrow}
787 \SetBreakableRel{\nrightarrow}
788 \SetBreakableRel{\nLeftarrow}

```

```

789 \SetBreakableRel{\nrightarrow}
790 \SetBreakableRel{\nleftrightharpoonrightarrow}
791 \SetBreakableRel{\nlefrightharpoonrightarrow}
792 \SetBreakableRel{\eqsim}
793 \SetBreakableRel{\shortmid}
794 \SetBreakableRel{\shortparallel}
795 \SetBreakableRel{\thicksim}
796 \SetBreakableRel{\thickapprox}
797 \SetBreakableRel{\approxeq}
798 \SetBreakableRel{\succapprox}
799 \SetBreakableRel{\precapprox}
800 \SetBreakableRel{\curvearrowleft}
801 \SetBreakableRel{\curvearrowright}
802 \SetBreakableRel{\backepsilon}
803 }{}

amstex
804 \@ifpackageloaded{amstex}% amstex
805 {
806 \SetBreakableRel{\vartriangleright} \SetBreakableRel{\rhd}
807 \SetBreakableRel{\vartriangleleft} \SetBreakableRel{\lhd}
808 \SetBreakableRel{\trianglerighteq} \SetBreakableRel{\unrhd}
809 \SetBreakableRel{\trianglelefteq} \SetBreakableRel{\unlhd}
810 \SetBreakableRel{\rightsquigarrow} \SetBreakableRel{\leadsto}
811 }{}

boisik
812 \@ifpackageloaded{boisik}% boisik
813 {
814 \SetMathOperator{\intup}
815 \SetOpenBracket{\binampersand}
816 \SetBreakableRel{\upharpoonright}
817 \SetBreakableRel{\downharpoonright}
818 \SetBreakableRel{\upharpoonleft}
819 \SetBreakableRel{\downharpoonleft}
820 \SetBreakableRel{\leftrightharpoons}
821 \SetBreakableRel{\rightleftarrows}
822 \SetBreakableRel{\leftrightharpoons}
823 \SetBreakableRel{\leftleftarrows}
824 \SetBreakableRel{\rightrightarrows}
825 \SetBreakableRel{\upuparrows}
826 \SetBreakableRel{\downdownarrows}
827 \SetBreakableRel{\twoheadrightarrow}
828 \SetBreakableRel{\twoheadleftarrow}
829 \SetBreakableRel{\rightarrowtail}
830 \SetBreakableRel{\leftarrowtail}
831 \SetBreakableRel{\rightsquigarrow}
832 \SetBreakableRel{\leftrightsquigarrow}
833 \SetBreakableRel{\Lsh}
834 \SetBreakableRel{\Rsh}
835 \SetBreakableRel{\looparrowleft}
836 \SetBreakableRel{\looparrowright}
837 \SetBreakableRel{\circlearrowright}
838 \SetBreakableRel{\circlearrowleft}
839 \SetBreakableRel{\curvearrowleft}

```

```

840 \SetBreakableRel{\curvearrowright}
841 \SetBreakableRel{\nleftarrow}
842 \SetBreakableRel{\nrightarrow}
843 \SetBreakableRel{\nlefttrightharpoonrightarrow}
844 \SetBreakableRel{\nLeftarrow}
845 \SetBreakableRel{\nRrightarrow}
846 \SetBreakableRel{\nLefttrightharpoonrightarrow}
847 \SetBreakableRel{\Lleftarrow}
848 \SetBreakableRel{\Rrightarrow}
849 \SetBreakableRel{\nLefttrightharpoonrightarrow}
850 % \SetBreakableRel{\hookrightarrow}
851 % \SetBreakableRel{\rhookrightarrow}
852 \SetBreakableRel{\multimap}
853 \SetBreakableRel{\multimapdot}
854 \SetBreakableRel{\therefore}
855 \SetBreakableRel{\because}
856 \SetBreakableRel{\between}
857 \SetBreakableRel{\Vdash}
858 \SetBreakableRel{\Vvdash}
859 \SetBreakableRel{\VDash}
860 \SetBreakableRel{\vDash}
861 \SetBreakableRel{\smallsmile}
862 \SetBreakableRel{\smallfrown}
863 \SetBreakableRel{\shortmid}
864 \SetBreakableRel{\shortparallel}
865 \SetBreakableRel{\thickapprox}
866 \SetBreakableBin{\divideontimes}
867 \SetBreakableBin{\lessdot}
868 \SetBreakableBin{\gtrdot}
869 \SetBreakableRel{\bumpeq}
870 \SetBreakableRel{\Bumpeq}
871 \SetBreakableRel{\leqslant}
872 \SetBreakableRel{\geqslant}
873 \SetBreakableRel{\eqslantless}
874 \SetBreakableRel{\eqslantgtr}
875 \SetBreakableRel{\curlyeqprec}
876 \SetBreakableRel{\curlyeqsucc}
877 \SetBreakableRel{\preccurlyeq}
878 \SetBreakableRel{\succcurlyeq}
879 \SetBreakableRel{\thicksim}
880 \SetBreakableRel{\backsimeq}
881 \SetBreakableRel{\eqsim}
882 \SetBreakableRel{\backsimeq}
883 \SetBreakableBin{\ltimes}
884 \SetBreakableBin{\rtimes}
885 \SetBreakableRel{\lll} \SetBreakableRel{\llless}
886 \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
887 \SetBreakableRel{\triangleq}
888 \SetBreakableRel{\circeq}
889 \SetBreakableRel{\eqcirc}
890 \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
891 \SetBreakableRel{\risingdotseq}
892 \SetBreakableRel{\fallingdotseq}
893 \SetBreakableRel{\varpropto}

```

```

894 \SetBreakableRel{\vartriangleright}
895 \SetBreakableRel{\vartriangleleft}
896 \SetBreakableRel{\trianglerighteq}
897 \SetBreakableRel{\trianglelefteq}
898 \SetBreakableRel{\blacktriangleright}
899 \SetBreakableRel{\blacktriangleleft}
900 \SetBreakableRel{\vartriangle}
901 \SetBreakableBin{\centerdot}
902 \SetBreakableBin{\boxplus}
903 \SetBreakableBin{\boxminus}
904 \SetBreakableBin{\boxtimes}
905 \SetBreakableBin{\boxdot}
906 \SetBreakableBin{\circledcirc}
907 \SetBreakableBin{\circledast}
908 \SetBreakableBin{\circleddash}
909 \SetBreakableBin{\intercal}
910 \SetBreakableRel{\prurel}
911 \SetBreakableRel{\scurel}
912 \SetBreakableRel{\disin}
913 \SetBreakableRel{\nisd}
914 \SetBreakableRel{\fatslash}
915 \SetBreakableRel{\fatbslash}
916 \SetBreakableRel{\nequiv}
917 \SetBreakableRel{\bagmember}
918 \SetBreakableRel{\lvertneqq}
919 \SetBreakableRel{\gvertneqq}
920 \SetBreakableRel{\nleq}
921 \SetBreakableRel{\ngeq}
922 \SetBreakableRel{\nless}
923 \SetBreakableRel{\ngtr}
924 \SetBreakableRel{\nprec}
925 \SetBreakableRel{\nsucc}
926 \SetBreakableRel{\lneqq}
927 \SetBreakableRel{\gneqq}
928 \SetBreakableRel{\nleqslant}
929 \SetBreakableRel{\ngeqslant}
930 \SetBreakableRel{\lneq}
931 \SetBreakableRel{\gneq}
932 \SetBreakableRel{\npreceq}
933 \SetBreakableRel{\nsucceq}
934 \SetBreakableRel{\nleqq}
935 \SetBreakableRel{\ngeqq}
936 \SetBreakableRel{\lnsim}
937 \SetBreakableRel{\gnsim}
938 \SetBreakableRel{\precnsim}
939 \SetBreakableRel{\succnsim}
940 \SetBreakableRel{\precneqq}
941 \SetBreakableRel{\succneqq}
942 \SetBreakableRel{\nsim}
943 \SetBreakableRel{\ncong}
944 \SetBreakableRel{\lnapprox}
945 \SetBreakableRel{\gnapprox}
946 \SetBreakableRel{\precnapprox}
947 \SetBreakableRel{\succnapprox}

```

```

948 \SetBreakableRel{\subset}
949 \SetBreakableRel{\nsupset}
950 \SetBreakableRel{\varsubsetneq}
951 \SetBreakableRel{\varsupsetneq}
952 \SetBreakableRel{\subsetneqq}
953 \SetBreakableRel{\nsupsetneqq}
954 \SetBreakableRel{\subsetneq}
955 \SetBreakableRel{\supsetneq}
956 \SetBreakableRel{\varsubsetneqq}
957 \SetBreakableRel{\varsupsetneqq}
958 \SetBreakableRel{\subsetneq}
959 \SetBreakableRel{\supsetneq}
960 \SetBreakableRel{\nsubseteq}
961 \SetBreakableRel{\nsupseteq}
962 \SetBreakableRel{\nparallel}
963 \SetBreakableRel{\nmid}
964 \SetBreakableRel{\nshortmid}
965 \SetBreakableRel{\nshortparallel}
966 \SetBreakableRel{\nvdash}
967 \SetBreakableRel{\nVdash}
968 \SetBreakableRel{\nvDash}
969 \SetBreakableRel{\nVDash}
970 \SetBreakableRel{\ntrianglerighteq}
971 \SetBreakableRel{\ntrianglelefteq}
972 \SetBreakableRel{\ntriangleleft}
973 \SetBreakableRel{\ntriangleright}
974 \SetBreakableRel{\precapprox}
975 \SetBreakableRel{\succapprox}
976 \SetBreakableRel{\precsim}
977 \SetBreakableRel{\succsim}
978 \SetBreakableRel{\lesssim}
979 \SetBreakableRel{\gtrsim}
980 \SetBreakableRel{\lessapprox}
981 \SetBreakableRel{\gtrapprox}
982 \SetBreakableRel{\leqq}
983 \SetBreakableRel{\geqq}
984 \SetBreakableRel{\lessgtr}
985 \SetBreakableRel{\gtrless}
986 \SetBreakableRel{\lesseqgtr}
987 \SetBreakableRel{\gtreqless}
988 \SetBreakableRel{\lesseqqgtr}
989 \SetBreakableRel{\gtreqqless}
990 \SetBreakableRel{\Subset}
991 \SetBreakableRel{\Supset}
992 \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
993 \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
994 \SetBreakableRel{\subteqq}
995 \SetBreakableRel{\supseteqq}
996 \SetBreakableBin{\curlywedge}
997 \SetBreakableBin{\curlyvee}
998 \SetBreakableBin{\veebar}
999 \SetBreakableBin{\barwedge}
1000 \SetBreakableBin{\doublebarwedge}
1001 \SetBreakableBin{\leftthreetimes}

```



```

1002 \SetBreakableBin{\rightthreetimes}
1003 \SetBreakableBin{\smallsetminus}
1004 \SetBreakableRel{\approx}
1005 \SetBreakableBin{\dotplus}
1006 \SetBreakableRel{\pitchfork}
1007 \SetBreakableBin{\oblong}
1008 \SetBreakableBin{\talloblong}
1009 \SetBreakableBin{\sslash}
1010 \SetBreakableBin{\bbslash}
1011 \SetBreakableRel{\hash}
1012 \SetBreakableRel{\varhash}
1013 \SetBreakableBin{\convolution}
1014 \SetBreakableBin{\coAsterisk}
1015 \SetBreakableRel{\veeeq}
1016 \SetBreakableRel{\corresponds}
1017 \SetBreakableRel{\arceq}
1018 \SetBreakableRel{\CircledEq}
1019 \SetBreakableRel{\eqbumped}
1020 \SetBreakableRel{\dotminus}
1021 \SetBreakableRel{\kernelcontraction}
1022 \SetBreakableRel{\dotsim}
1023 \SetBreakableRel{\simdots}
1024 \SetBreakableBin{\circplus}
1025 \SetBreakableBin{\dottimes}
1026 \SetBreakableBin{\vartimes}
1027 \SetBreakableBin{\merge}
1028 \SetBreakableBin{\veeonvee}
1029 \SetBreakableBin{\obslash}
1030 \SetBreakableBin{\otop}
1031 \SetBreakableBin{\obot}
1032 \SetBreakableBin{\oleft}
1033 \SetBreakableBin{\oright}
1034 \SetBreakableBin{\obar}
1035 \SetBreakableBin{\otriangle}
1036 \SetBreakableBin{\olessthan}
1037 \SetBreakableBin{\ogreaterthan}
1038 \SetBreakableBin{\ovee}
1039 \SetBreakableBin{\owedge}
1040 \SetBreakableBin{\boxslash}
1041 \SetBreakableBin{\boxtop}
1042 \SetBreakableBin{\boxbot}
1043 \SetBreakableBin{\boxleft}
1044 \SetBreakableBin{\boxright}
1045 \SetBreakableBin{\boxbar}
1046 \SetBreakableBin{\boxslash}
1047 \SetBreakableBin{\boxtriangle}
1048 \SetBreakableBin{\boxast}
1049 \SetBreakableBin{\boxcircle}
1050 \SetBreakableBin{\boxdivision}
1051 \SetBreakableBin{\boxbox}
1052 \SetBreakableBin{\diamondop}
1053 \SetBreakableBin{\diamondminus}
1054 \SetBreakableBin{\diamondbar}
1055 \SetBreakableBin{\diamondtimes}

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1056 \SetBreakableBin{\diamondplus}
1057 \SetBreakableBin{\diamondtriangle}
1058 \SetBreakableBin{\diamondcircle}
1059 \SetBreakableBin{\cupleftarrow}
1060 \SetBreakableBin{\varcup}
1061 \SetBreakableBin{\varcap}
1062 \SetBreakableBin{\varsqcup}
1063 \SetBreakableBin{\varsqcap}
1064 \SetBreakableRel{\sqsubset}
1065 \SetBreakableRel{\sqsupset}
1066 \SetBreakableRel{\inplus}
1067 \SetBreakableRel{\niplus}
1068 \SetBreakableRel{\varisins}
1069 \SetBreakableRel{\varnis}
1070 \SetBreakableRel{\subsetplus}
1071 \SetBreakableRel{\supsetplus}
1072 \SetBreakableRel{\subsetpluseq}
1073 \SetBreakableRel{\supsetpluseq}
1074 \SetBreakableBin{\nplus}
1075 \SetBreakableBin{\sqplus}
1076 \SetBreakableRel{\multimapboth}
1077 \SetBreakableRel{\multimapdotboth}
1078 \SetBreakableRel{\multimapdotbothB}
1079 \SetBreakableRel{\multimapdotbothA}
1080 \SetBreakableRel{\multimapinv}
1081 \SetBreakableRel{\multimapdotinv}
1082 \SetBreakableRel{\multimapbothvert}
1083 \SetBreakableRel{\multimapdotbothvert}
1084 \SetBreakableRel{\multimapdotbothBvert}
1085 \SetBreakableRel{\multimapdotbothAvert}
1086 \SetBreakableRel{\dfourier}
1087 \SetBreakableRel{\Dfourier}
1088 \SetBreakableRel{\ztransf}
1089 \SetBreakableRel{\Ztransf}
1090 \SetBreakableRel{\Lt}
1091 \SetBreakableRel{\Gt}
1092 \SetBreakableBin{\leftslice}
1093 \SetBreakableBin{\rightslice}
1094 \SetBreakableRel{\trianglelefteqslant}
1095 \SetBreakableRel{\trianglerighteqslant}
1096 \SetBreakableBin{\Ydown}
1097 \SetBreakableBin{\Yup}
1098 \SetBreakableBin{\Yleft}
1099 \SetBreakableBin{\Yright}
1100 \SetBreakableRel{\dashVv}
1101 \SetBreakableRel{\DashV}
1102 \SetBreakableRel{\DashV}
1103 \SetBreakableRel{\dashV}
1104 \SetBreakableBin{\lbag}
1105 \SetBreakableBin{\rbag}
1106 \SetBreakableRel{\Perp}
1107 \SetBreakableBin{\moo}
1108 \SetBreakableBin{\baro}
1109 \SetBreakableBin{\pluscirc}

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1110 \SetBreakableBin{\minuso}
1111 \SetBreakableRel{\llcurly}
1112 \SetBreakableRel{\ggcurly}
1113 \SetBreakableRel{\strictfi}
1114 \SetBreakableRel{\strictif}
1115 \SetBreakableRel{\ac}
1116 \SetBreakableBin{\varintercal}
1117 \SetBreakableRel{\equalparallel}
1118 \SetBreakableBin{\plustrif}
1119 \SetBreakableBin{\smashtimes}
1120 \SetBreakableRel{\ltcir}
1121 \SetBreakableRel{\gtcir}
1122 \SetBreakableRel{\glj}
1123 \SetBreakableBin{\Vee}
1124 \SetBreakableBin{\Wedge}
1125 \SetBreakableBin{\fatsemi}
1126 \SetBreakableRel{\forkv}
1127 \SetBreakableRel{\topfork}
1128 \SetBreakableRel{\twoheaduparrow}
1129 \SetBreakableRel{\twoheaddownarrow}
1130 \SetBreakableRel{\mapsfrom}
1131 \SetBreakableRel{\mapsup}
1132 \SetBreakableRel{\maptdown}
1133 \SetBreakableRel{\nVleftarrow}
1134 \SetBreakableRel{\nVrightarrow}
1135 \SetBreakableRel{\rightarrowcircle}
1136 \SetBreakableRel{\narrowcorner}
1137 \SetBreakableRel{\nearrowcorner}
1138 \SetBreakableRel{\barovernorthwestarrow}
1139 \SetBreakableRel{\carriagereturn}
1140 \SetBreakableRel{\linefeed}
1141 \SetBreakableRel{\leftzigzagarrow}
1142 \SetBreakableRel{\Nwarrow}
1143 \SetBreakableRel{\Nearrow}
1144 \SetBreakableRel{\Swarrow}
1145 \SetBreakableRel{\Searrow}
1146 \SetBreakableRel{\nHuparrow}
1147 \SetBreakableRel{\nHdownarrow}
1148 \SetBreakableRel{\updownarrowbar}
1149 \SetBreakableRel{\barleftarrow}
1150 \SetBreakableRel{\barrightarrow}
1151 \SetBreakableRel{\leftsquigarrow}
1152 \SetBreakableRel{\rightsquigarrow}
1153 \SetBreakableRel{\leftrightsquigarrow}
1154 \SetBreakableRel{\downzigzagarrow}
1155 \SetBreakableRel{\rightthreearrows}
1156 \SetBreakableRel{\barleftarrowrightarrowbar}
1157 \SetBreakableRel{\leftdasharrow}
1158 \SetBreakableRel{\rightdasharrow}
1159 \SetBreakableRel{\updasharrow}
1160 \SetBreakableRel{\downdasharrow}
1161 \SetBreakableRel{\upwhitearrow}
1162 \SetBreakableRel{\downwhitearrow}
1163 \SetBreakableRel{\whitearrowupfrombar}

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1164 \SetBreakableRel{\whitearrowuppedestal}
1165 \SetBreakableRel{\whitearrowuppedestalhbar}
1166 \SetBreakableRel{\whitearrowuppedestaltvbar}
1167 \SetBreakableRel{\twoheadwhiteuparrow}
1168 \SetBreakableRel{\twoheadwhiteuparrowpedestal}
1169 \SetBreakableRel{\updownwhitearrow}
1170 \SetBreakableRel{\leftblackarrow}
1171 \SetBreakableRel{\rightblackarrow}
1172 \SetBreakableRel{\upblackarrow}
1173 \SetBreakableRel{\downblackarrow}
1174 \SetBreakableRel{\leftrightblackarrow}
1175 \SetBreakableRel{\updownblackarrow}
1176 \SetBreakableRel{\curlyveeuparrow}
1177 \SetBreakableRel{\curlyveedownarrow}
1178 \SetBreakableRel{\curlywedgепuparrow}
1179 \SetBreakableRel{\curlywedgedownarrow}
1180 \SetBreakableRel{\Mapsfrom}
1181 \SetBreakableRel{\Mapsto}
1182 \SetBreakableRel{\leftwhitearrow}
1183 \SetBreakableRel{\rightwhitearrow}
1184 \SetBreakableRel{\leftwhiteroundarrow}
1185 \SetBreakableRel{\rightwhiteroundarrow}
1186 \SetBreakableRel{\righttoleftarrow}
1187 \SetBreakableRel{\lefttorightarrow}
1188 \SetBreakableRel{\looparrowdownleft}
1189 \SetBreakableRel{\looparrowdownright}
1190 \SetBreakableRel{\uptodownarrow}
1191 \SetBreakableRel{\downtoupward}
1192 \SetBreakableRel{\nnearrow}
1193 \SetBreakableRel{\ssearrow}
1194 \SetBreakableRel{\nnwarrow}
1195 \SetBreakableRel{\sswarrow}
1196 \SetBreakableRel{\curvearrowleft}
1197 \SetBreakableRel{\curvearrowright}
1198 \SetBreakableRel{\curvearrowleftright}
1199 \SetBreakableRel{\curvearrowbotleft}
1200 \SetBreakableRel{\curvearrowbotright}
1201 \SetBreakableRel{\curvearrowbotleftright}
1202 \SetBreakableRel{\leftrightharroweq}
1203 \SetBreakableRel{\eqleftrightharrow}
1204 \SetBreakableRel{\dlsh}
1205 \SetBreakableRel{\drsh}
1206 \SetBreakableRel{\leftarrowTriangle}
1207 \SetBreakableRel{\rightarrowTriangle}
1208 \SetBreakableRel{\leftrightharrowTriangle}
1209 \SetBreakableRel{\leftarrowtriangle}
1210 \SetBreakableRel{\rightarrowtriangle}
1211 \SetBreakableRel{\leftrightharrowtriangle}
1212 }-{}
euler
1213 \@ifpackageloaded{euler}% euler
1214 {
1215 \SetBreakableRel{\uparrow}
1216 \SetBreakableRel{\downarrow}

```

```

1217 \SetBreakableRel{\updownarrow}
1218 \SetBreakableRel{\Uparrow}
1219 \SetBreakableRel{\Downarrow}
1220 \SetBreakableRel{\Updownarrow}
1221 % \SetBreakableRel{\lhook}
1222 % \SetBreakableRel{\rhook}
1223 }{}

fourier

1224 \@ifpackageloaded{fourier}% fourier
1225 {
1226 \SetMathOperator{\iint}
1227 \SetMathOperator{\iiint}
1228 \SetMathOperator{\oiint}
1229 \SetMathOperator{\oiiint}
1230 \SetMathOperator{\slashint}
1231 \SetOpenBracket{\llbracket}
1232 \SetBreakableRel{\leqslant}
1233 \SetBreakableRel{\geqslant}
1234 \SetBreakableRel{\parallelslant}
1235 \SetBreakableRel{\vDash}
1236 \SetBreakableRel{\blacktriangleleft}
1237 \SetBreakableRel{\blacktriangleright}
1238 \SetBreakableRel{\nleqslant}
1239 \SetBreakableRel{\ngeqslant}
1240 \SetBreakableRel{\nparallel}
1241 \SetBreakableRel{\nparallelslant}
1242 \SetBreakableRel{\nvDash}
1243 \SetBreakableBin{\intercal}
1244 \SetBreakableRel{\varsubsetneq}
1245 \SetBreakableRel{\notowns}
1246 \SetBreakableBin{\smallsetminus}
1247 \SetBreakableRel{\subsetneqq}
1248 \SetBreakableRel{\rightrightarrows}
1249 \SetBreakableRel{\leftleftarrows}
1250 \SetBreakableRel{\curvearrowleft}
1251 \SetBreakableRel{\curvearrowright}
1252 \SetBreakableRel{\Downarrow}
1253 }{}

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

1254
1255 \ifnum\@ifpackageloaded{lucbmath}{1}{%
1256 \@ifpackageloaded{lucidabr}{1}{%
1257 \@ifpackageloaded{lucmin}{1}{%
1258 \@ifpackageloaded{lucmtime}{1}{%
1259 \@ifpackageloaded{luctime}{1}{0}}}}=1\relax%
1260 \SetMathOperator{\surfint}
1261 \SetMathOperator{\midint}
1262 \SetMathOperator{\midoint}
1263 \SetMathOperator{\midsurfint}
1264 \SetMathOperator{\largeint}
1265 \SetBreakableRel{\leadsfrom}
1266 \SetBreakableRel{\defineequal}
1267 \SetBreakableRel{\notequiv}

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1268 \SetBreakableRel{\notapprox}
1269 \SetBreakableRel{\notasympt}
1270 \SetBreakableRel{\notsubset}
1271 \SetBreakableRel{\notsupset}
1272 \SetBreakableRel{\notsim}
1273 \SetBreakableRel{\notsubseteq}
1274 \SetBreakableRel{\notsupseteq}
1275 \SetBreakableRel{\notsimeq}
1276 \SetBreakableRel{\notsqsubseteq}
1277 \SetBreakableRel{\notsqsupseteq}
1278 \SetBreakableRel{\notcong}
1279 \SetBreakableRel{\notni}
1280 \SetBreakableBin{\boxdot}
1281 \SetBreakableBin{\boxplus}
1282 \SetBreakableBin{\boxtimes}
1283 \SetBreakableBin{\centerdot}
1284 \SetBreakableRel{\circlearrowright}
1285 \SetBreakableRel{\circlearrowleft}
1286 \SetBreakableRel{\leftrightharpoons}
1287 \SetBreakableBin{\boxminus}
1288 \SetBreakableRel{\Vdash}
1289 \SetBreakableRel{\vDash}
1290 \SetBreakableRel{\vDash}
1291 \SetBreakableRel{\twoheadrightarrow}
1292 \SetBreakableRel{\twoheadleftarrow}
1293 \SetBreakableRel{\leftleftarrows}
1294 \SetBreakableRel{\rightrightarrows}
1295 \SetBreakableRel{\upuparrows}
1296 \SetBreakableRel{\downdownarrows}
1297 \SetBreakableRel{\upharpoonright}
1298 \SetBreakableRel{\downharpoonright}
1299 \SetBreakableRel{\upharpoonleft}
1300 \SetBreakableRel{\downharpoonleft}
1301 \SetBreakableRel{\rightarrowtail}
1302 \SetBreakableRel{\leftarrowtail}
1303 \SetBreakableRel{\leftrightarrows}
1304 \SetBreakableRel{\rightleftarrows}
1305 \SetBreakableRel{\Lsh}
1306 \SetBreakableRel{\Rsh}
1307 \SetBreakableRel{\rightsquigarrow}
1308 \SetBreakableRel{\leftsquigarrow}
1309 \SetBreakableRel{\leftrightsquigarrow}
1310 \SetBreakableRel{\looparrowleft}
1311 \SetBreakableRel{\looparrowright}
1312 \SetBreakableRel{\circeq}
1313 \SetBreakableRel{\succsim}
1314 \SetBreakableRel{\gtrsim}
1315 \SetBreakableRel{\gtrapprox}
1316 \SetBreakableRel{\multimap}
1317 \SetBreakableRel{\image}
1318 \SetBreakableRel{\original}
1319 \SetBreakableRel{\therefore}
1320 \SetBreakableRel{\because}
1321 \SetBreakableRel{\doteqdot}

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1322 \SetBreakableRel{\triangleq}
1323 \SetBreakableRel{\preccsim}
1324 \SetBreakableRel{\lessim}
1325 \SetBreakableRel{\lessapprox}
1326 \SetBreakableRel{\eqslantless}
1327 \SetBreakableRel{\eqslantgtr}
1328 \SetBreakableRel{\curlyeqprec}
1329 \SetBreakableRel{\curlyeqsucc}
1330 \SetBreakableRel{\preccurlyeq}
1331 \SetBreakableRel{\leqq}
1332 \SetBreakableRel{\leqslant}
1333 \SetBreakableRel{\lessgtr}
1334 \SetBreakableRel{\risingdotseq}
1335 \SetBreakableRel{\fallingdotseq}
1336 \SetBreakableRel{\succcurlyeq}
1337 \SetBreakableRel{\geqq}
1338 \SetBreakableRel{\geqslant}
1339 \SetBreakableRel{\gtrless}
1340 \SetBreakableRel{\vartriangleright}
1341 \SetBreakableRel{\vartriangleleft}
1342 \SetBreakableRel{\trianglerighteq}
1343 \SetBreakableRel{\trianglelefteq}
1344 \SetBreakableRel{\between}
1345 \SetBreakableRel{\blacktriangleright}
1346 \SetBreakableRel{\blacktriangleleft}
1347 \SetBreakableRel{\vartriangle}
1348 \SetBreakableRel{\eqcirc}
1349 \SetBreakableRel{\lesseqgtr}
1350 \SetBreakableRel{\gtreqless}
1351 \SetBreakableRel{\lesseqqgtr}
1352 \SetBreakableRel{\gtreqqlless}
1353 \SetBreakableRel{\Rrightarrow}
1354 \SetBreakableRel{\Lleftarrow}
1355 \SetBreakableBin{\veebar}
1356 \SetBreakableBin{\barwedge}
1357 \SetBreakableRel{\varpropto}
1358 \SetBreakableRel{\smallsmile}
1359 \SetBreakableRel{\smallfrown}
1360 \SetBreakableRel{\Subset}
1361 \SetBreakableRel{\Supset}
1362 \SetBreakableBin{\Cup}
1363 \SetBreakableBin{\Cap}
1364 \SetBreakableBin{\curlywedge}
1365 \SetBreakableBin{\curlyvee}
1366 \SetBreakableBin{\leftthreetimes}
1367 \SetBreakableBin{\rightthreetimes}
1368 \SetBreakableRel{\subseteq}
1369 \SetBreakableRel{\supseteq}
1370 \SetBreakableRel{\bumpeq}
1371 \SetBreakableRel{\Bumpeq}
1372 \SetBreakableRel{\lll}
1373 \SetBreakableRel{\ggg}
1374 \SetBreakableRel{\pitchfork}
1375 \SetBreakableBin{\dotplus}

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1376 \SetBreakableRel{\backsim}
1377 \SetBreakableRel{\backsimeq}
1378 \SetBreakableBin{\intercal}
1379 \SetBreakableBin{\circledcirc}
1380 \SetBreakableBin{\circledast}
1381 \SetBreakableBin{\circleddash}
1382 \SetBreakableRel{\lvertneqq}
1383 \SetBreakableRel{\gvertneqq}
1384 \SetBreakableRel{\nleq}
1385 \SetBreakableRel{\ngeq}
1386 \SetBreakableRel{\nless}
1387 \SetBreakableRel{\ngtr}
1388 \SetBreakableRel{\nprec}
1389 \SetBreakableRel{\nsucc}
1390 \SetBreakableRel{\lneqq}
1391 \SetBreakableRel{\gneqq}
1392 \SetBreakableRel{\nleqslant}
1393 \SetBreakableRel{\ngeqslant}
1394 \SetBreakableRel{\lneq}
1395 \SetBreakableRel{\gneq}
1396 \SetBreakableRel{\npreceq}
1397 \SetBreakableRel{\nsucceq}
1398 \SetBreakableRel{\precnsim}
1399 \SetBreakableRel{\succnsim}
1400 \SetBreakableRel{\lnsim}
1401 \SetBreakableRel{\gnsim}
1402 \SetBreakableRel{\nleqq}
1403 \SetBreakableRel{\ngeqq}
1404 \SetBreakableRel{\precneqq}
1405 \SetBreakableRel{\succneqq}
1406 \SetBreakableRel{\precnapprox}
1407 \SetBreakableRel{\succnapprox}
1408 \SetBreakableRel{\lnapprox}
1409 \SetBreakableRel{\gnapprox}
1410 \SetBreakableRel{\nsim}
1411 \SetBreakableRel{\ncong}
1412 \SetBreakableRel{\diagup}
1413 \SetBreakableRel{\diagdown}
1414 \SetBreakableRel{\varsubsetneq}
1415 \SetBreakableRel{\varsupsetneq}
1416 \SetBreakableRel{\nsubseteq}
1417 \SetBreakableRel{\nsupseteq}
1418 \SetBreakableRel{\subseteq}
1419 \SetBreakableRel{\supseteq}
1420 \SetBreakableRel{\varsubseteq}
1421 \SetBreakableRel{\varsupseteq}
1422 \SetBreakableRel{\subsetneq}
1423 \SetBreakableRel{\supsetneq}
1424 \SetBreakableRel{\subseteq}
1425 \SetBreakableRel{\supseteq}
1426 \SetBreakableRel{\nparallel}
1427 \SetBreakableRel{\nmid}
1428 \SetBreakableRel{\nshortmid}
1429 \SetBreakableRel{\nshortparallel}

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1430 \SetBreakableRel{\nvdash}
1431 \SetBreakableRel{\nVdash}
1432 \SetBreakableRel{\nvDash}
1433 \SetBreakableRel{\nVDash}
1434 \SetBreakableRel{\ntrianglerighteq}
1435 \SetBreakableRel{\ntrianglelefteq}
1436 \SetBreakableRel{\ntriangleleft}
1437 \SetBreakableRel{\ntriangleright}
1438 \SetBreakableRel{\nleftarrow}
1439 \SetBreakableRel{\nrightarrow}
1440 \SetBreakableRel{\nLeftarrow}
1441 \SetBreakableRel{\nRightarrow}
1442 \SetBreakableRel{\nLeftrightarrow}
1443 \SetBreakableRel{\nleftrightarrow}
1444 \SetBreakableBin{\divideontimes}
1445 \SetBreakableRel{\eqsim}
1446 \SetBreakableRel{\lessdot}
1447 \SetBreakableRel{\gtrdot}
1448 \SetBreakableBin{\ltimes}
1449 \SetBreakableBin{\rtimes}
1450 \SetBreakableRel{\shortmid}
1451 \SetBreakableRel{\shortparallel}
1452 \SetBreakableBin{\smallsetminus}
1453 \SetBreakableRel{\thicksim}
1454 \SetBreakableRel{\thickapprox}
1455 \SetBreakableRel{\approxeq}
1456 \SetBreakableRel{\succapprox}
1457 \SetBreakableRel{\precapprox}
1458 \SetBreakableRel{\curvearrowleft}
1459 \SetBreakableRel{\curvearrowright}
1460 \SetBreakableRel{\backepsilon}
1461 \fi

  mathbbol
1462 \@ifpackageloaded{mathbbol}% mathbbol
1463 {
1464   \SetOpenBracket{\Langle}
1465   \SetOpenBracket{\Lparen}
1466 }{}

  mdwmath
1467 \@ifpackageloaded{mdwmath}% mdwmath
1468 {
1469   \SetBreakableBin{\bitand}
1470   \begingroup
1471     \catcode'\&\active \xdef&{\noexpand\brokenbin{\mathchar\number\mathcode'\&}}
1472   \endgroup
1473   \AtBeginDocument{\mathcode'\&=32768 }
1474 }{}

  sbmm
1475 \@ifpackageloaded{sbmm}% sbmm
1476 {
1477   \SetOpenBracket{\Lparen}
1478 }{}

```

```

stmaryrd
1479 \@ifpackageloaded{stmaryrd}% stmaryrd
1480 {
1481   \SetOpenBracket{\Lbag}
1482   \SetOpenBracket{\llparenthesis}
1483   \SetOpenBracket{\binampersand}
1484   \SetOpenBracket{\lllfloor}
1485   \SetOpenBracket{\lllceil}
1486   \SetOpenBracket{\llbracket}
1487   \SetBreakableRel{\shortleftarrow}
1488   \SetBreakableRel{\shortrightarrow}
1489   \SetBreakableRel{\shortuparrow}
1490   \SetBreakableRel{\shortdownarrow}
1491   \SetBreakableBin{\Yup}
1492   \SetBreakableBin{\Ydown}
1493   \SetBreakableBin{\Yleft}
1494   \SetBreakableBin{\Yright}
1495   \SetBreakableBin{\varcurlyvee}
1496   \SetBreakableBin{\varcurlywedge}
1497   \SetBreakableBin{\minuso}
1498   \SetBreakableBin{\baro}
1499   \SetBreakableBin{\sslash}
1500   \SetBreakableBin{\bbslash}
1501   \SetBreakableBin{\moo}
1502   \SetBreakableBin{\varotimes}
1503   \SetBreakableBin{\varoast}
1504   \SetBreakableBin{\varobar}
1505   \SetBreakableBin{\varodot}
1506   \SetBreakableBin{\varoslash}
1507   \SetBreakableBin{\varobslash}
1508   \SetBreakableBin{\varocircle}
1509   \SetBreakableBin{\varoplus}
1510   \SetBreakableBin{\varominus}
1511   \SetBreakableBin{\boxast}
1512   \SetBreakableBin{\boxbar}
1513   \SetBreakableBin{\boxdot}
1514   \SetBreakableBin{\boxslash}
1515   \SetBreakableBin{\boxbslash}
1516   \SetBreakableBin{\boxcircle}
1517   \SetBreakableBin{\boxbox}
1518   \SetBreakableBin{\boxempty}
1519   \SetBreakableBin{\merge}
1520   \SetBreakableBin{\vartimes}
1521   \SetBreakableBin{\fatsemi}
1522   \SetBreakableRel{\sswarrow}
1523   \SetBreakableRel{\ssearrow}
1524   \SetBreakableRel{\curlywedgeuparrow}
1525   \SetBreakableRel{\curlywedgeuparrow}
1526   \SetBreakableBin{\fatslash}
1527   \SetBreakableBin{\fatbslash}
1528   \SetBreakableBin{\lbag}
1529   \SetBreakableBin{\rbag}
1530   \SetBreakableBin{\varbigcirc}
1531   \SetBreakableRel{\leftrightharpoons}

```

```

1532 \SetBreakableRel{\curlyveedownarrow}
1533 \SetBreakableRel{\curlyveeuparrow}
1534 \SetBreakableRel{\nnwarrow}
1535 \SetBreakableRel{\nnearrow}
1536 \SetBreakableBin{\leftslice}
1537 \SetBreakableBin{\rightslice}
1538 \SetBreakableBin{\varolessthan}
1539 \SetBreakableBin{\varogreaterthan}
1540 \SetBreakableBin{\varovee}
1541 \SetBreakableBin{\varowedge}
1542 \SetBreakableBin{\talloblong}
1543 \SetBreakableBin{\interleave}
1544 \SetBreakableBin{\obar}
1545 \SetBreakableBin{\obslash}
1546 \SetBreakableBin{\olessthan}
1547 \SetBreakableBin{\ogreaterthan}
1548 \SetBreakableBin{\ovee}
1549 \SetBreakableBin{\owedge}
1550 \SetBreakableBin{\oblong}
1551 \SetBreakableRel{\inplus}
1552 \SetBreakableRel{\niplus}
1553 \SetBreakableBin{\nplus}
1554 \SetBreakableRel{\subsetplus}
1555 \SetBreakableRel{\supsetplus}
1556 \SetBreakableRel{\subsetpluseq}
1557 \SetBreakableRel{\supsetpluseq}
1558 \SetBreakableRel{\trianglelefteqslant}
1559 \SetBreakableRel{\trianglerighteqslant}
1560 \SetBreakableRel{\ntrianglelefteqslant}
1561 \SetBreakableRel{\ntrianglerighteqslant}
1562 \SetBreakableRel{\arrownot}
1563 \SetBreakableRel{\Arrownot}
1564 \SetBreakableRel{\Mapstochar}
1565 \SetBreakableRel{\mapsfromchar}
1566 \SetBreakableRel{\Mapsfromchar}
1567 \SetBreakableBin{\leftrightharrowtriangle}
1568 \SetBreakableRel{\leftarrowtriangle}
1569 \SetBreakableRel{\rightarrowtriangle}
1570 \SetBreakableRel{\longarrownot}
1571 \SetBreakableRel{\Longarrownot}
1572 \SetBreakableRel{\Mapsto}
1573 \SetBreakableRel{\mapsfrom}
1574 \SetBreakableRel{\Mapsfrom}
1575 \SetBreakableRel{\Longmapsto}
1576 \SetBreakableRel{\longmapsfrom}
1577 \SetBreakableRel{\Longmapsfrom}
1578 }{}

wasysym
1579 \@ifpackageloaded{wasysym}% wasysym
1580 {
1581 \SetMathOperator{\varint}
1582 \SetMathOperator{\iint}
1583 \SetMathOperator{\iiint}
1584 \SetMathOperator{\varoint}

```

```
1585 \SetMathOperator{\oint}
1586 \SetBreakableBin{\LHD}
1587 \SetBreakableBin{\RHD}
1588 \SetBreakableRel{\apprle}
1589 \SetBreakableRel{\apprge}
1590 \SetBreakableRel{\wasympto}
1591 \SetBreakableRel{\invneg}
1592 \SetBreakableBin{\ocircle}
1593 \SetBreakableRel{\logof}
1594 }{}
```