

# 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 the "TeX and Russian Traditions of Typesetting" and supports most of  $\LaTeX$ 's mathematical packages (some known issues are listed in the "Known issues" section below).

## 2 Usage

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

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

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

boisik, euler, eulervm, fourier, icomma, latexsym, lucbmath, lucidabr, lucmin, lucmtime, luctime, mathbbol, mathtools, mdwmath, program, sbbm, stmaryrd, unicode-math, wasysym, xy.

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

### 3 Options

Some aspects of the `rmathbr` can be altered using package options. In most cases, it should be sufficient to load the package without extra options, but sometimes it may be necessary to change default options for compatibility with other packages.

The “key=value” scheme is used with the following possible options (default value is printed in italics):

<code>script</code>	noactive <i>mathactive</i> active	This option declares what way <code>rmathbr</code> will affect <code>_</code> and <code>^</code> commands (sub- and superscripts). In the “noactive” mode, they have default $\TeX$ behavior, but it may be necessary to manually wrap some indices into curly braces, e.g. $A^{\star}$ instead of just $A^{\star}$ . In the “mathactive” mode, both <code>_</code> and <code>^</code> become commands in math mode that process arguments properly, and extra wrapping is unnecessary. And in the “active” mode these commands can be used for scripts even in the text mode (e.g. $H_{20}$ ).
<code>run</code>	atload atbegindocument <i>auto</i>	This option declares when to affect math commands for hyphenation, directly at package loading time, or later at the <code>\begin{document}</code> . The latter is necessary to deal with packages that declare math symbols at the <code>\begin{document}</code> . The “auto” value allows to switch to the “atbegindocument” mode automatically (currently, if <code>unicode-math</code> or <code>mathtools</code> packages are loaded).
<code>cdottimes</code>	true <i>false</i>	Re-declare <code>\cdot</code> command as <code>\cdott</code> (see <code>\cdott</code> description below) to hyphenate it using the <code>\times</code> character. By default, it is disabled because <code>\cdot</code> is also used for scalar products (e.g. $\vec{a} \cdot \vec{b}$ ), and in this case, it is wrong to replace it with <code>\times</code> on break, because <code>\times</code> is usually used for cross products.
<code>brokencolon</code>	true <i>false</i>	According to Russian typography traditions, math expression shouldn’t be broken on the division character ( <code>:</code> ). But if you like to allow it, just set this option to true.

<code>brokenminus</code>	<i>true</i> <i>false</i>	Usually, it's allowed to break math expression on the "minus" character, but it's possible to disable it.
<code>brokenbin</code>	<i>true</i> <i>false</i>	This option disables breaks on binary operations (keeping relations only). See also <code>\BrokenBinOff</code> and <code>\BrokenBinOn</code> macros.

Internally, `scripts=mathactive` assigns the `mathactive` (12) category to `^` and `_` characters, `scripts=active` assigns the `active` (13) category, and `scripts=noactive` keeps default categories to `^` and `_` characters (7 and 8, correspondingly).

For backward compatibility, `rmathbr` supports the `noactivechars` option as an alias for `scripts=noactive`, the `mathactivechars` option as an alias for `scripts=mathactive`, and the `activechars` option as an alias for `scripts=active`. These options are deprecated, and it's recommended to switch to the corresponding `script` option.

## 4 Macros

<code>\*</code>	Macro <code>\*</code> is used to mark multiplication point that is invisible and changed to $\times$ at the break only. E.g. $(a+b)\*(a-b)$ .
<code>\cdott</code>	This command displays <code>\cdot</code> ( $\cdot$ ) that is changed to <code>\times</code> ( $\times$ ) at the break.
<code>\nobr</code>	This command is used to prevent break expression on the following math operator. E.g. $a\nobr-b$ .
<code>\SetBreakableRel</code>	Declares breakable relation operator, e.g. <code>\SetBreakableRel{\MyEqual}</code> .
<code>\SetBreakableBin</code>	Declares breakable binary operator, e.g. <code>\SetBreakableBin{\MyPlus}</code> .
<code>\SetBreakableInner</code>	Declares breakable "inner" expression, e.g. <code>\SetBreakableInner{\ldots}</code> .
<code>\SetOpenBracket</code>	Declares opening bracket ( <code>rmathbr</code> disables break directly after brackets), e.g. <code>\SetOpenBracket{\MyOpenBracket}</code> .
<code>\SetMathOperator</code>	Declares math operator ( <code>rmathbr</code> disables break directly after operators), e.g. <code>\SetMathOperator{\MySum}</code> .
<code>\SetPunctuation</code>	Declares punctuation command ( <code>rmathbr</code> disables break directly after punctuation to prevent break and duplication in the case like $\$1,-1\$$ ), e.g. <code>\SetPunctuation{\MyColon}</code> .
<code>\UnsetBrokenCmd</code>	Restores original command, e.g. to avoid potential issues or conflicts with other packages. Usage example: <code>\UnsetBrokenCmd{\cdot}</code> to disable break on <code>\cdot</code> . Note that in the case of <code>run=atbegindocument</code> (or <code>auto</code> ) this command should be used after <code>\begin{document}</code> .
<code>\BrokenBinOff</code>	

`\BrokenBinOn` Disables break on binary operations, see also `brokenbin=false` option.

`\BrokenBinOn` Enables break on binary operations.

## 5 Known issues

- `breqn` package: cannot work together with `rmathbr` (as `breqn` redefines all the math in  $\TeX$ )

## 6 Changelog

### 1.1.1 (18-December-2020)

- fix issue with a prime (′) followed by a superscript
- fix issue with `\text` command as sub-/superscripts

### 1.1 (11-December-2020)

- add support of XeTeX/LuaTeX and `unicode-math` package
- add new key-value options (`script`, `run`, `cdottimes`, `brokenminus`, `brokencolon`, `brokenbin`)
- add new commands (`\UnsetBrokenCmd`, `\BrokenBinOff` and `\BrokenBinOn`)
- add support of `mathtools` package
- add a patch for `bm` package
- add a patch for `xy` package
- remove dependence on `mathstyle` package
- fix math class for =, <, > (`\mathrel` instead of `\mathbin`)
- fix math class for : (`\mathbin` instead of `\mathrel`)
- fix processing of colon-related commands (e.g. `\coloneq` from `mathtools`, etc.)
- performance optimizations

### 1.0.3 (10-April-2016)

- fix issue with sub-/superscripts in `\Biggl`, `\biggl`, `\Bigl`, `\bigl`

### 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` (broken `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` 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**

Load required packages.

```
1 \RequirePackage{ifetex}
2 \RequirePackage{ifluatex}
3 \RequirePackage{xkeyval}
```

```

4 \RequirePackage{expl3}

\mathbr@kv
5 \edef\mathbr@kv{\@currname.\@currentx}

\DeclareBoolOptionX The macro to declare a boolean option.
6 \def\DeclareBoolOptionX#1#2{%
7   \define@boolkey{\mathbr@kv}[mathbr@kv@]{#1}[true]{#2}%
8 }

\DeclareChoiceOptionX The macro to declare a choice option.
9 \def\DeclareChoiceOptionX#1[#2]#3[#4]#5{%
10  \define@choicekey{\mathbr@kv}{#1}[#2]{#3}[#4]{#5}%
11 }

Warn about known issues.
12 \ifpackageloaded{breqn}{%
13   \PackageError{mathbr}{'mathbr' package cannot be used together with 'breqn' package!}{}%
14 }{}

```

## Interface

```

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

\SetBreakableRel Makes breakable relation sign.
16 \def\SetBreakableRel#1{\mathbr@setbreakable{#1}{\brokenrel}}

\SetBreakableBin Makes breakable binary operation.
17 \def\SetBreakableBin#1{\mathbr@setbreakable{#1}{\brokenbin}}

\SetBreakableInner Makes breakable inner (like \ldots).
18 \def\SetBreakableInner#1{\mathbr@setbreakable{#1}{\brokeninner}}

\SetOpenBracket Disables breaks after open bracket.
19 \def\SetOpenBracket#1{\mathbr@nobrafter{#1}}

\SetPunctuation Disables breaks after punctuation sign.
20 \def\SetPunctuation#1{\mathbr@nobrafter{#1}}

\SetMathOperator Disables breaks after math operator.
21 \def\SetMathOperator#1{\mathbr@setbreakable{#1}{\mathbr@mathop}}

\UnsetBrokenCmd Restores original command.
22 \def\UnsetBrokenCmd#1{\mathbr@unsetbroken{#1}}

\BrokenBinOff Disables break on binary operations.
23 \def\BrokenBinOff{\mathbr@brokenbinoff}

\BrokenBinOn Enables break on binary operations.
24 \def\BrokenBinOn{\mathbr@brokenbinon}

```

`\brokenrel` Makes argument as breakable relation sign.  
 25 `\DeclareRobustCommand{\brokenrel}[1]{\mathbr@brokenrel{#1}}`

`\brokenbin` Makes argument as breakable binary operation.  
 26 `\DeclareRobustCommand{\brokenbin}[1]{\mathbr@brokenbin{#1}}`

`\brokeninner` Makes argument as breakable inner.  
 27 `\DeclareRobustCommand{\brokeninner}[1]{\mathbr@brokeninner{#1}}`

## Options

Start to process options.

First of all, warn about deprecated options:

```

28 \xDeclareBoolOptionX{noactivechars}{
29   \ifmathbr@kv@noactivechars
30     \PackageWarning{rmathbr}{^^J Option 'noactivechars' is deprecated.^^J
31                           Use 'scripts=noactive' instead.^^J}
32   \ExecuteOptionsX{scripts=noactive}
33   \fi
34 }

35 \xDeclareBoolOptionX{mathactivechars}{
36   \ifmathbr@kv@mathactivechars
37     \PackageWarning{rmathbr}{^^J Option 'mathactivechars' is deprecated.^^J
38                           Use 'scripts=mathactive' instead.^^J}
39   \ExecuteOptionsX{scripts=mathactive}
40   \fi
41 }

42 \xDeclareBoolOptionX{activechars}{
43   \ifmathbr@kv@activechars
44     \PackageWarning{rmathbr}{^^J Option 'activechars' is deprecated.^^J
45                           Use 'scripts=active' instead.^^J}
46   \ExecuteOptionsX{scripts=active}
47   \fi
48 }

```

Process script option:

```

49 \xDeclareChoiceOptionX{scripts}[\xkv@val\xkv@nr]{noactive,mathactive,active}[mathactive]{
50   \let\mathbr@kv@scriptsmode=\xkv@nr
51 }

```

Set when to patch math commands, at the package loading or at the `\begin{document}` (i.e. after other packages are loaded and set its macros):

```
52 \newif\ifmathbr@patch@begindocument
```

Note that by default 'atload' is used unless 'unicode-math' or 'mathtools' are loaded.

```

53 \xDeclareChoiceOptionX{run}[\xkv@val\xkv@nr]{atload,atbegindocument,auto}[auto]{
54   \ifcase\xkv@nr\relax
55     \mathbr@patch@begindocumentfalse
56   \or
57     \mathbr@patch@begindocumenttrue
58   \or
59     \@ifpackageloaded{unicode-math}{\mathbr@patch@begindocumenttrue}{}

```

```

60   \@ifpackageloaded{mathtools}{\rmathbr@patch@begindocumenttrue}{}
61   \fi
62 }

```

The option to make `\cdot` works like `\cdott`:

```

63 \xDeclareBoolOptionX{cdottimes}{}
    Other options (see documentation):
64 \xDeclareBoolOptionX{brokenminus}{}
65 \xDeclareBoolOptionX{brokencolon}{}
66 \xDeclareBoolOptionX{brokenbin}{%
67   \ifrmathbr@kv@brokenbin
68   \else
69     \AtBeginDocument{\BrokenBinOff}
70   \fi
71 }

```

Default values:

```

72 \ExecuteOptionsX{scripts=mathactive}
73 \ExecuteOptionsX{run=auto}
74 \ExecuteOptionsX{cdottimes=false}
75 \ExecuteOptionsX{brokenminus=true}
76 \ExecuteOptionsX{brokencolon=false}
77 \ExecuteOptionsX{brokenbin=true}

```

Execute options:

```

78 \ProcessOptionsX

```

## Implementation

Switch to scripts mode

```

79 \ifcase\rmathbr@kv@scriptsmode
80   % nop
81 \or
82   \AtBeginDocument{\catcode'\^=12\mathcode'\^=32768\catcode'\_ =12\mathcode'\_ =32768}
83 \or
84   \AtBeginDocument{\catcode'\^ \active\catcode'\_ \active}
85 \fi

```

`\rmathbr@pr@m@s` Fix the prime symbol to take into account active math superscripts.

```

86 \def\rmathbr@pr@m@s{%
87   \ifx'\@let@token
88     \let\rmathbr@command=\pr@@@s
89   \else\ifx\rmathbr@superscript@std\@let@token
90     \let\rmathbr@command=\pr@@@t
91   \else\ifx\rmathbr@superscript@other\@let@token
92     \let\rmathbr@command=\pr@@@t
93   \else
94     \let\rmathbr@command=\egroup
95   \fi\fi\fi
96   \rmathbr@command}

97 \ifnum\rmathbr@kv@scriptsmode>0\relax
98   \let\pr@m@s=\rmathbr@pr@m@s
99 \fi

```



```

\mathbr@unicodemath@primes@patch Fix the prime symbol for unicode-math package.
  \__um_superscript:n 100 \ExplSyntaxOn
                    101 \def\mathbr@unicodemath@primes@patch{
                    102   \cs_gset:Nn \__um_superscript:n
                    103     {
                    104       \mathbr@superscript@std\bgroup ##1
                    105       \peek_meaning_remove:NTF \mathbr@superscript@other \__um_arg_i_before_egroup:n {
                    106         \peek_meaning_remove:NTF \mathbr@superscript@std \__um_arg_i_before_egroup:n \egroup
                    107       }
                    108     }
                    109 }
                    110 \ExplSyntaxOff

                    Store original penalty values (via mathchardef trick).
                    111 \mathchardef\mathbr@orig@relpenalty=\relpenalty
                    112 \mathchardef\mathbr@orig@binoppenalty=\binoppenalty

                    Independent hyphen penalties are supported by LuaTeX only. That's why we
                    save default penalty to \exhyphenpenalty (as \exhyphenpenalty will be actual
                    penalty for math breaks in TEX and XeTeX).
                    113 \ifluatex\else
                    114   \exhyphenpenalty=\relpenalty
                    115 \fi

                    Disable default breaks.
                    116 \relpenalty=13131
                    117 \binoppenalty=14141

\everymath First symbol/command in equation is nonbreakable.
                    118 \expandafter\everymath\expandafter{\the\everymath\nobr }

                    Save some characters definitions.

\mathbr@superscript@std
                    119 \begingroup\catcode'\^=7 \global\let\mathbr@superscript@std=\^ \endgroup

\mathbr@superscript@other
                    120 \begingroup\catcode'\^=12\global\let\mathbr@superscript@other=\^ \endgroup

\mathbr@subscript@std
                    121 \begingroup\catcode'\_ =8 \global\let\mathbr@subscript@std=_ \endgroup

\mathbr@subscript@other
                    122 \begingroup\catcode'\_ =12\global\let\mathbr@subscript@other=_ \endgroup

\mathbr@prime
                    123 \begingroup\catcode'\prime=12\global\let\mathbr@prime=\prime \endgroup

\mathbr@superscript
                    124 \def\mathbr@superscript{\mathbr@check@arg\mathbr@superscript@std}

\mathbr@subscript
                    125 \def\mathbr@subscript{\mathbr@check@arg\mathbr@subscript@std}

```

`\rmathbr@check@arg` Check that argument is `rmathbr`-processed command and wrap it into braces (if necessary)

```
126 \def\rmathbr@check@arg#1{%
127   \let\rmathbr@checkarg@cmd=#1
128   \futurelet\rmathbr@let@token\rmathbr@check@@arg%
129 }
```

`\rmathbr@check@@arg`

```
130 \def\rmathbr@check@@arg#1{%
131   \let\rmathbr@command=\rmathbr@wrap@arg
132   \ifx\rmathbr@let@token\bgroup\else
133     \edef\rmathbr@orig{\expandafter\@gobble\string#1}
134     \ifx\rmathbr@orig\empty\else
135       \expandafter\ifx\csname rmathbr@orig@\rmathbr@orig\endcsname\relax
136       \let\rmathbr@command=\@firstofone
137     \fi
138   \fi
139   \fi
140   \rmathbr@checkarg@cmd\rmathbr@command{#1}%
141 }
```

`\rmathbr@wrap@arg`

```
142 \def\rmathbr@wrap@arg#1{#{#1}}

    Setup sub- and superscripts.

143 \begingroup
144   \catcode'\^ \active \gdef~{\rmathbr@superscript}
145   \catcode'\_ \active \gdef_{\rmathbr@subscript}
146 \endgroup

147 \newif\ifrmathbr@activemathchar

    Check for XeTeX/LuaTeX
148 \ifx\Umathcode \@undefined

    Standard TeX
```

`\rmathbr@checkmathchar`

```
149 \def\rmathbr@checkmathchar#1{%
150   \ifnum\mathcode#1<32768\relax%
151     \rmathbr@activemathcharfalse%
152   \else%
153     \rmathbr@activemathchartrue%
154   \fi}
```

`\rmathbr@mathchar`

```
155 \def\rmathbr@mathchar#1{\mathchar\number\mathcode#1}
```

`\rmathbr@makeactivemathopen`

```
156 \def\rmathbr@makeactivemathopen#1{%
157   \begingroup
158     \xdef\@tempa{\mathopen\delimiter\number\delcode#1 \noexpand\nobr }
159     \begingroup\lccode'~=#1\catcode#1\active\lowercase{\endgroup\xdef~}{\@tempa}
160   \endgroup
```

```

161 }
162 \else
XeTeX/LuaTeX

```

```
\rmathbr@activemathcode
```

```

163 \begingroup
164 \mathcode'\ += "8000
165 \xdef\rmathbr@activemathcode{\number\Umathcodenum'\ +}
166 \endgroup

```

```
\rmathbr@checkmathchar
```

```

167 \def\rmathbr@checkmathchar#1{%
168 \ifnum\Umathcodenum#1=\rmathbr@activemathcode\relax%
169 \expandafter\rmathbr@activemathchartrue%
170 \else%
171 \expandafter\rmathbr@activemathcharfalse%
172 \fi}

```

```
\rmathbr@mathchar
```

```

173 \def\rmathbr@mathchar#1{\Umathcharnum\number\Umathcodenum#1}

```

```
\rmathbr@truncdiv
```

```

174 \def\rmathbr@truncdiv#1#2{((#1-(#2-1)/2)/#2)}

```

```
\rmathbr@modulo
```

```

175 \def\rmathbr@modulo#1#2{(#1-\rmathbr@truncdiv{#1}{#2})*#2)}

```

```
\rmathbr@makeactivemathopen
```

```

176 \def\rmathbr@makeactivemathopen#1{%
177 \begingroup
178 \def\@tempa{\Udelcodenum#1}
179 \ifnum\@tempa<"1000000
180 \xdef\@tempb{\mathopen\delimiter\number\@tempa\space\noexpand\nobr }
181 \else
182 \xdef\@tempb{\mathopen\Udelimiter4 %
183 \number\numexpr\rmathbr@truncdiv{\rmathbr@modulo{\@tempa}{ "4000000}}{"200000}\relax%
184 \space\number\numexpr\rmathbr@modulo{\@tempa}{ "200000}\relax\noexpand\nobr }
185 \fi
186 \begingroup\lccode'\ ~=#1\catcode#1\active\expandafter\lowercase\expandafter%
187 {\expandafter\endgroup\expandafter\gdef\expandafter~\expandafter}\expandafter{\@tempb}
188 \endgroup
189 }
190 \fi

```

```
\rmathbr@makeactivemath
```

```

191 \def\rmathbr@makeactivemath#1#2#3{
192 \begingroup
193 \rmathbr@checkmathchar{#1}
194 \lccode'\ ~=#1
195 \catcode#1\active
196 \ifrmathbr@activemathchar
197 \PackageWarning{rmathbr}{Redeclare active math #1 symbol to default mathchar value}

```

```

198     \lowercase{\gdef~}{#2{#3}}
199     \else
200     \lowercase{\xdef~}{\noexpand#2{\rmathbr@mathchar{#1}}}
201     \fi
202 \endgroup
203 }

```

`\rmathbr@makeactivemathpunct`

```

204 \def\rmathbr@makeactivemathpunct#1#2{
205   \begingroup
206   \rmathbr@checkmathchar{#1}
207   \lccode'~=#1
208   \catcode#1\active
209   \ifrmathbr@activemathchar
210     \PackageWarning{rmathbr}{Redeclare active math #1 symbol to default mathchar value}
211     \lowercase{\gdef~}{\mathpunct#2\nobr }
212   \else
213     \lowercase{\xdef~}{\mathpunct\rmathbr@mathchar{#1} \noexpand\nobr }
214   \fi
215 \endgroup
216 }

```

```

217 \newif\ifrmathbr@protected

```

`\rmathbr@str@contains`

```

218 \def\rmathbr@str@contains#1#2{\begingroup\edef\x{\endgroup\noexpand\in@{#1}{#2}}\x}

```

`\rmathbr@ifprotected`

```

219 \def\rmathbr@ifprotected#1{%
220   \rmathbr@protectedfalse
221   \edef\meaning@cmd{\meaning#1}
222   \rmathbr@str@contains{\string#1\space}\meaning@cmd
223   \ifin@
224     \rmathbr@str@contains{\string\protect\space}\meaning@cmd
225   \ifin@\rmathbr@protectedtrue\else
226     \rmathbr@str@contains{\string\x@protect\space}\meaning@cmd
227   \ifin@\rmathbr@protectedtrue\else
228     \rmathbr@str@contains{\string\@testopt\space}\meaning@cmd
229   \ifin@\rmathbr@protectedtrue\else
230     \rmathbr@str@contains{\string\@protected@testopt\space}\meaning@cmd
231   \ifin@\rmathbr@protectedtrue\fi
232   \fi
233   \fi
234   \fi
235   \fi
236 }

```

`\rmathbr@ReDeclareRobustCommand` Command without arguments

```

237 \def\rmathbr@ReDeclareRobustCommand#1#2{%
238   \begingroup
239   \ifx#1\@undefined
240   \else
241     \edef\var@orig@I{\rmathbr@orig@\expandafter@gobble\string#1}
242     \edef\var@Ispace{\expandafter@gobble\string#1 }

```

```

243     \expandafter\ifx\csname\var@orig@I\endcsname\relax
244     \ifetex
245         \expandafter\global\expandafter\let\csname\var@orig@I\endcsname#1
246     \else
247         \rmathbr@ifprotected#1
248         \ifrmathbr@protected
249             \expandafter\global\expandafter\let\csname\var@orig@I\expandafter\endcsname%
250 \csname\var@Ispace\endcsname
251         \else
252             \expandafter\global\expandafter\let\csname\var@orig@I\endcsname#1
253         \fi
254     \fi
255 \fi
256 \ifetex
257     \protected\gdef#1{#2}
258 \else
259     \expandafter\gdef\csname\var@Ispace\endcsname{#2}% no arguments
260     \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
261 \fi
262 \fi
263 \endgroup%
264 }

```

`\rmathbr@ReDeclareRobustCommandI` Command with one argument

```

265 \def\rmathbr@ReDeclareRobustCommandI#1#2{%
266     \begingroup
267     \ifx#1\@undefined
268     \else
269         \edef\var@orig@I{\rmathbr@orig@\expandafter\@gobble\string#1}
270         \edef\var@Ispace{\expandafter\@gobble\string#1\space}
271         \expandafter\ifx\csname\var@orig@I\endcsname\relax
272         \ifetex
273             \expandafter\global\expandafter\let\csname\var@orig@I\endcsname#1
274         \else
275             \rmathbr@ifprotected#1
276             \ifrmathbr@protected
277                 \expandafter\global\expandafter\let\csname\var@orig@I\expandafter\endcsname%
278 \csname\var@Ispace\endcsname
279             \else
280                 \expandafter\global\expandafter\let\csname\var@orig@I\endcsname#1
281             \fi
282         \fi
283     \fi
284 \ifetex
285     \protected\gdef#1##1{#2}
286 \else
287     \expandafter\gdef\csname\var@Ispace\endcsname##1{#2}% one argument
288     \xdef#1{\noexpand\protect\expandafter\noexpand\csname\var@Ispace\endcsname}
289 \fi
290 \fi
291 \endgroup%
292 }

```

`\brokenrel`

```

293 \rmathbr@ReDeclareRobustCommandI{\brokenrel}{\rmathbr@brokenrel{#1}}

\brokenbin
294 \rmathbr@ReDeclareRobustCommandI{\brokenbin}{\rmathbr@brokenbin{#1}}

\brokeninner
295 \rmathbr@ReDeclareRobustCommandI{\brokeninner}{\rmathbr@brokeninner{#1}}%

296 \let\rmathbr@save@brokenrel=\brokenrel
297 \let\rmathbr@save@brokenbin@on=\brokenbin
298 \let\rmathbr@save@brokenbin=\brokenbin
299 \let\rmathbr@save@brokeninner=\brokeninner

\rmathbr@brokenbinon
300 \def\rmathbr@brokenbinon{%
301   \let\rmathbr@save@brokenbin=\rmathbr@save@brokenbin@on
302   \ifx\brokenbin\@firstofone\else
303     \let\brokenbin=\rmathbr@save@brokenbin
304   \fi
305 }

\rmathbr@brokenbinoff
306 \def\rmathbr@brokenbinoff{%
307   \let\rmathbr@save@brokenbin=\mathbin
308   \ifx\brokenbin\@firstofone\else
309     \let\brokenbin=\rmathbr@save@brokenbin
310   \fi
311 }

\rmathbr@setbrokens
312 \def\rmathbr@setbrokens{%
313   \let\brokenrel=\rmathbr@save@brokenrel
314   \let\brokenbin=\rmathbr@save@brokenbin
315   \let\brokeninner=\rmathbr@save@brokeninner
316   \let\rmathbr@colontest=\rmathbr@save@colontest
317 }

\rmathbr@unsetbrokens
318 \def\rmathbr@unsetbrokens{%
319   \let\brokenrel=\@firstofone
320   \let\brokenbin=\@firstofone
321   \let\brokeninner=\@firstofone
322   \let\rmathbr@colontest=\rmathbr@colon@std
323 }

\rmathbr@brokenrel
324 \def\rmathbr@brokenrel#1{%
325   \def\rmathbr@arg{#1}
326   \let\rmathbr@this=\rmathbr@brokenrel
327   \let\rmathbr@output=\rmathbr@@brokenrel
328   \futurelet\rmathbr@let@token\rmathbr@brokenop%
329 }

```

```

\rmathbr@brokenbin
330 \def\rmathbr@brokenbin#1{%
331   \def\rmathbr@arg{#1}
332   \let\rmathbr@this=\rmathbr@brokenbin
333   \let\rmathbr@output=\rmathbr@@brokenbin
334   \futurelet\rmathbr@let@token\rmathbr@brokenop%
335 }

\rmathbr@brokeninner
336 \def\rmathbr@brokeninner#1{%
337   \def\rmathbr@arg{#1}
338   \let\rmathbr@this=\rmathbr@brokeninner
339   \let\rmathbr@output=\rmathbr@@brokeninner
340   \futurelet\rmathbr@let@token\rmathbr@brokenop%
341 }

\rmathbr@mathop
342 \def\rmathbr@mathop#1{%
343   \def\rmathbr@arg{#1}
344   \let\rmathbr@this=\rmathbr@mathop
345   \let\rmathbr@output=\rmathbr@@mathop
346   \futurelet\rmathbr@let@token\rmathbr@brokenop%
347 }

\rmathbr@@brokenrel  LuaTeX only supports per-disc-node penalties
348 \def\rmathbr@@brokenrel#1{%
349   \ifnum\lastpenalty=\relpenalty
350     \mathrel{#1}
351   \else
352     \mathrel{#1}
353     \ifx$\rmathbr@let@token
354     \else
355       \begingroup
356         \hyphenpenalty\rmathbr@orig@relpenalty
357         \rmathbr@selector{#1}
358       \endgroup
359     \fi
360   \fi
361   \rmathbr@setbrokens
362   \penalty\relpenalty %
363 }

\rmathbr@@brokenbin
364 \def\rmathbr@@brokenbin#1{%
365   \ifnum\lastpenalty=\relpenalty
366     \mathbin{#1}
367   \else
368     \mathbin{#1}
369     \ifx$\rmathbr@let@token
370     \else
371       \begingroup
372         \hyphenpenalty\rmathbr@orig@binoppenalty
373         \rmathbr@selector{#1}

```

```

374     \endgroup
375     \fi
376 \fi
377 \mathbr@setbrokens
378 \penalty\binoppenalty %
379 }

```

`\mathbr@@brokeninner`

```

380 \def\mathbr@@brokeninner#1{%
381   \ifnum\lastpenalty=\relpenalty
382     \mathinner{#1}
383   \else
384     \mathinner{#1}
385     \ifx$\mathbr@let@token
386     \else
387       \begingroup
388         \hyphenpenalty\mathbr@orig@relpenalty
389         \mathbr@selector{#1}
390       \endgroup
391     \fi
392   \fi
393   \mathbr@setbrokens
394   \penalty\relpenalty %
395 }

```

`\mathbr@@mathop`

```

396 \def\mathbr@@mathop#1{%
397   \mathbr@setbrokens
398   #1\nobr %
399 }

```

`\mathbr@selector`

```

400 \def\mathbr@selector#1{%
401   \mathchoice
402     {\discretionary}{\hbox{$\m@th\displaystyle#1$}}{}}
403     {\discretionary}{\hbox{$\m@th\textstyle#1$}}{}}
404     {\discretionary}{\hbox{$\m@th\scriptstyle#1$}}{}}
405     {\discretionary}{\hbox{$\m@th\scriptscriptstyle#1$}}{}}%
406 }

```

`\mathbr@brokenop`

```

407 \def\mathbr@brokenop{%
408   \ifmode
409     \mathbr@unsetbrokens
410     \ifx\mathbr@subscript@std\mathbr@let@token
411       \let\@command=\mathbr@brokenglue
412     \else\ifx\mathbr@subscript@other\mathbr@let@token
413       \let\@command=\mathbr@brokenglue
414     \else\ifx\mathbr@superscript@std\mathbr@let@token
415       \let\@command=\mathbr@brokenglue
416     \else\ifx\mathbr@superscript@other\mathbr@let@token
417       \let\@command=\mathbr@brokenglue
418     \else\ifx\limits\mathbr@let@token
419       \let\@command=\mathbr@brokenskip

```



```

420 \else\ifx\nolimits\rmathbr@let@token
421 \let\@command=\rmathbr@brokenskip
422 \else\ifx\rmathbr@prime\rmathbr@let@token
423 \let\@command=\rmathbr@brokenskip
424 \else\ifx\relax\rmathbr@let@token
425 \let\@command=\rmathbr@brokenskip
426 \else
427 \let\@command=\rmathbr@output
428 \fi\fi\fi\fi\fi\fi\fi\fi
429 \else
430 \let\@command=\relax
431 \fi
432 \expandafter\@command\expandafter{\rmathbr@arg}%
433 }

```

`\rmathbr@brokenglue`

```

434 \def\rmathbr@brokenglue#1#2#3{%
435 \def\rmathbr@temp{#1#2{#3}}
436 \expandafter\rmathbr@this\expandafter{\rmathbr@temp}%
437 }

```

`\rmathbr@brokenskip`

```

438 \def\rmathbr@brokenskip#1#2{%
439 \def\rmathbr@temp{#1#2}
440 \expandafter\rmathbr@this\expandafter{\rmathbr@temp}%
441 }

```

`\rmathbr@setbreakable`

```

442 \def\rmathbr@setbreakable#1#2{%
443 \begingroup
444 \ifx#1\@undefined
445 \else
446 \edef\rmathbr@orig{\rmathbr@orig@\expandafter\@gobble\string#1}
447 \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
448 \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{%
449 \expandafter#2\expandafter{\csname\rmathbr@orig\endcsname}}
450 \fi
451 \fi
452 \endgroup%
453 }

```

`\rmathbr@nobrafter`

```

454 \def\rmathbr@nobrafter#1{%
455 \begingroup
456 \ifx#1\@undefined
457 \else
458 \edef\rmathbr@orig{\rmathbr@orig@\expandafter\@gobble\string#1}
459 \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
460 \expandafter\rmathbr@ReDeclareRobustCommand\expandafter#1\expandafter{%
461 \csname\rmathbr@orig\endcsname\nobr}
462 \fi
463 \fi
464 \endgroup%
465 }

```

`\rmathbr@unsetbroken`

```

466 \def\rmathbr@unsetbroken#1{
467   \begingroup
468     \ifx#1\@undefined
469     \else
470       \edef\rmathbr@orig{\rmathbr@orig@\expandafter@gobble\string#1}
471       \expandafter\ifx\csname\rmathbr@orig\endcsname\relax
472       \else
473         \expandafter\global\expandafter\let\expandafter#1\csname\rmathbr@orig\endcsname
474         \expandafter\global\expandafter\let\csname\rmathbr@orig\endcsname=\undefined
475       \fi
476     \fi
477   \endgroup%
478 }
```

## Redeclaration of math signs

`\rmathbr@patch@commands`

```

479 \def\rmathbr@patch@commands{%

    Basic math.

=
480 \rmathbr@makeactivemath{'\={}\brokenrel}{\mathchar12349}

<
481 \rmathbr@makeactivemath{'\<}\brokenrel}{\mathchar12604}

>
482 \rmathbr@makeactivemath{'\>}\brokenrel}{\mathchar12606}

+
483 \rmathbr@makeactivemath{'\+}\brokenbin}{\mathchar8235}

-
484 \ifrmathbr@kv@brokenminus
485   \rmathbr@makeactivemath{'\-\}\brokenbin}{\mathchar8704}
486 \fi

*
487 \rmathbr@makeactivemath{'\*}\brokenbin}{\mathchar8707}

(
488 \rmathbr@makeactivemathopen{'\{)

[
489 \rmathbr@makeactivemathopen{'\[}

, Check for the icomma package and the eulermv package with icomma option.
490 \@ifpackageloaded{icomma}{%
491   \expandafter\def\expandafter\sm@rtcomma\expandafter{\sm@rtcomma\nobr}
492 }{
```

```

493 \ifx\domathcomma\@undefined%
494   \mathbr@makeactivemathpunct{'\,}{\mathchar24891}
495 \else%
496   \expandafter\def\expandafter\domathcomma\expandafter{\domathcomma\nobr}
497 \fi
498 }

```

; Check for the program package.

```

499 \@ifpackageloaded{program}{%
500   \begingroup
501   \catcode'\;\active
502   \lccode'\~='\";
503   \lowercase{\gdef~}{\ifmmode\semicolon\";\nobr\else\@semicolon\fi}
504 \endgroup
505 }{
506   \mathbr@makeactivemathpunct{'\;}{\mathchar24635}
507 }

```

: Some extra code is necessary to distinguish between binary operation : and relation  
:=.

```

508 \begingroup%
509 \catcode'\:\active%
510 \lccode'\~='\";%
511 \lowercase{\gdef~}{\mathbr@colontest}%
512 \endgroup

```

\mathbr@colontest Check for :=.

```

513 \def\mathbr@colontest{\futurelet\mathbr@let@token\mathbr@do@colontest}

```

\mathbr@do@colontest

```

514 \def\mathbr@do@colontest{%
515   \ifx=\mathbr@let@token
516     \expandafter\mathbr@letsign
517   \else
518     \expandafter\mathbr@colon
519   \fi
520 }%

521 \mathbr@checkmathchar{'\;}
522 \ifmathbr@activemathchar
523   \PackageWarning{rmathbr}{Redeclare active math '\: symbol to default mathchar value}
524   \def\mathbr@colon@std{\mathchar12346}
525   \ifmathbr@kv@brokencolon
526     \def\mathbr@colon{\brokenbin{\mathbr@colon@std}}
527   \else
528     \def\mathbr@colon{\mathbin{\mathbr@colon@std}}
529   \fi
530   \def\mathbr@letsign##1{\brokenrel{\mathbr@colon@std\mathchar12349}}
531 \else
532   \edef\mathbr@colon@std{\mathbr@mathchar{'\:}}

```

```

533 \ifmathbr@kv@brokencolon
534   \def\rmathbr@colon{\brokenbin{\rmathbr@colon@std}}
535 \else
536   \def\rmathbr@colon{\mathbin{\rmathbr@colon@std}}
537 \fi

538 \edef\rmathbr@letsign##1{\noexpand\brokenrel{\rmathbr@colon@std\rmathbr@mathchar{'\=}}}
539 \fi

540 \let\rmathbr@save@colontest=\rmathbr@colontest%

Support of unicode-math package
541 \@ifpackageloaded{unicode-math}{
542   \begingroup
543     \def\UnicodeMathSymbol##1##2##3##4{%
544       \ifnum\number##1>127\relax
545         \expandafter\let\expandafter\@char\Uchar\number##1\relax
546         \ifx\@char##2\relax
547           \let\cmd\relax
548           \ifx##3\mathrel
549             \def\cmd{\brokenrel}
550           \else\ifx##3\mathbin
551             \def\cmd{\brokenbin}
552           \else\ifx##3\mathop
553             \def\cmd{\rmathbr@mathop}
554           \else\ifx##3\mathpunct
555             \let\cmd=\nobr
556           \fi\fi\fi\fi
557         \ifx\cmd\relax\else
558           \edef\var@orig@name{\rmathbr@orig@\expandafter\@gobble\string##2}
559           \expandafter\def\expandafter\var@orig\expandafter{\csname\var@orig@name\endcsname}
560           \rmathbr@checkmathchar{\number##1}
561           \ifmathbr@activemathchar
562             \begingroup
563               \lccode'\~=\number##1
564               \catcode\number##1\active
565               \lowercase{\endgroup\expandafter\global\expandafter\let\var@orig~}
566           \else
567             \expandafter\xdef\var@orig{\rmathbr@mathchar{\number##1}}
568             \global\mathcode\number##1="8000
569           \fi
570           \ifx\cmd\nobr
571             \edef\@tempa{\expandafter\noexpand\var@orig\noexpand\nobr}
572           \else
573             \edef\@tempa{\expandafter\noexpand\cmd{\expandafter\noexpand\var@orig}}
574           \fi
575           \begingroup
576             \lccode'\~=\number##1
577             \catcode\number##1\active
578             \lowercase{\endgroup\expandafter\gdef\expandafter~\expandafter}{\@tempa}
579         \fi
580       \fi
581     \fi
582   }
583   \let\par=\relax

```

```

584 \catcode'\="=12
585 \@@input{unicode-math-table.tex}
586 \endgroup
587 \ifnum\rmathbr@kv@scriptsmode>0\relax
588 \rmathbr@unicodemath@primes@patch
589 \fi
590 }{}

```

`\not` Redeclare `\not`.

```

591 \rmathbr@ReDeclareRobustCommandI{\not}{%
592 \begingroup
593 \edef\rmathbr@orig{\rmathbr@orig@expandafter@gobble\string##1}
594 \expandafter\let\expandafter\rmathbr@origmacro\csname\rmathbr@orig\endcsname
595 \ifx\rmathbr@origmacro##1\relax
596 \begingroup
597 \let##1=\rmathbr@origmacro
598 \brokenrel{\rmathbr@orig@not##1}
599 \endgroup
600 \else
601 \brokenrel{\rmathbr@orig@not##1}
602 \fi
603 \endgroup%
604 }

```

Open brackets.

```

605 \rmathbr@ReDeclareRobustCommandI{\bigl}{\rmathbr@mathop{\mathopen\big##1}}
606 \rmathbr@ReDeclareRobustCommandI{\Bigl}{\rmathbr@mathop{\mathopen\Big##1}}
607 \rmathbr@ReDeclareRobustCommandI{\biggl}{\rmathbr@mathop{\mathopen\bigg##1}}
608 \rmathbr@ReDeclareRobustCommandI{\Biggl}{\rmathbr@mathop{\mathopen\Bigg##1}}
609 \SetOpenBracket{\lmoustache}
610 \SetOpenBracket{\langle}
611 \SetOpenBracket{\lbrace}
612 \SetOpenBracket{\lceil}
613 \SetOpenBracket{\lfloor}
614 \SetOpenBracket{\lgroup}
615 \SetOpenBracket{\lvert}
616 \SetOpenBracket{\lVert}
617 \SetOpenBracket{\ulcorner}
618 \SetOpenBracket{\llcorner}
619 \SetOpenBracket{\Lbrack}

```

Math operators.

```

620 \SetMathOperator{\coprod}
621 \SetMathOperator{\bigvee}
622 \SetMathOperator{\bigwedge}
623 \SetMathOperator{\biguplus}
624 \SetMathOperator{\bigcap}
625 \SetMathOperator{\bigcup}
626 \SetMathOperator{\int}
627 \SetMathOperator{\prod}
628 \SetMathOperator{\sum}
629 \SetMathOperator{\bigotimes}
630 \SetMathOperator{\bigoplus}
631 \SetMathOperator{\bigodot}

```

```

632 \SetMathOperator{\oint}
633 \SetMathOperator{\bigscup}
634 \SetMathOperator{\smallint}

```

Punctuations.

```

635 \SetPunctuation{\ldotp}
636 \SetPunctuation{\cdotp}
637 \SetPunctuation{\colon}
638 \SetPunctuation{\period}

```

Binary Operations.

```

639 \SetBreakableBin{\triangleleft}
640 \SetBreakableBin{\triangleright}
641 \SetBreakableBin{\bigtriangleup}
642 \SetBreakableBin{\bigtriangledown}
643 \SetBreakableBin{\wedge} \SetBreakableBin{\land}
644 \SetBreakableBin{\vee} \SetBreakableBin{\lor}
645 \SetBreakableBin{\cap}
646 \SetBreakableBin{\cup}
647 \SetBreakableBin{\ddagger}
648 \SetBreakableBin{\dagger}
649 \SetBreakableBin{\sqcap}
650 \SetBreakableBin{\sqcup}
651 \SetBreakableBin{\uplus}
652 \SetBreakableBin{\amalg}
653 \SetBreakableBin{\diamond}
654 \SetBreakableBin{\bullet}
655 \SetBreakableBin{\wr}
656 \SetBreakableBin{\div}
657 \SetBreakableBin{\odot}
658 \SetBreakableBin{\oslash}
659 \SetBreakableBin{\otimes}
660 \SetBreakableBin{\ominus}
661 \SetBreakableBin{\oplus}
662 \SetBreakableBin{\mp}
663 \SetBreakableBin{\pm}
664 \SetBreakableBin{\circ}
665 \SetBreakableBin{\bigcirc}
666 \SetBreakableBin{\setminus}
667 \SetBreakableBin{\ast}
668 \SetBreakableBin{\star}
669 \SetBreakableBin{\times}
670 \SetBreakableBin{\cdot}

```

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

```

671 \def\rmathbr@cdott{%
672   $\begingroup\hyphenpenalty\rmathbr@orig@binoppenalty\discretionary%
673     {\hbox{$\m@th\rmathbr@orig@times$}}%
674     {\hbox{$\m@th\rmathbr@orig@times$}}%
675     {\hbox{$\m@th\mkern\medmuskip\rmathbr@orig@cdot\mkern\medmuskip$}}\endgroup$
676 }

```

`\cdott`

```

677 \def\cdott{%
678   \ifmmode

```

```

679 \ifetex
680 \ifinner%
681 \ifnum\currentgrouptype=15\relax
682 \mathbr@cdott
683 \else
684 \mathbr@orig@cdot
685 \fi
686 \else
687 \mathbr@orig@cdot
688 \fi
689 \else
690 \mathbr@cdott
691 \fi
692 \else
693 \mathbr@orig@cdot
694 \fi
695 }

\cdot
696 \ifmathbr@kv@cdottimes
697 \let\cdot\cdott
698 \fi

\*
699 \def\*{\mathbin{}}%
700 \begingroup%
701 \hyphenpenalty\mathbr@orig@binoppenalty%
702 \mathchoice{%
703 \discretionary{\hbox{$\m@th\displaystyle\mkern\thinmuskip\times$}}%
704 {\hbox{$\m@th\displaystyle\times\mkern\thinmuskip$}}{}%
705 }{%
706 \discretionary{\hbox{$\m@th\textstyle\mkern\thinmuskip\times$}}%
707 {\hbox{$\m@th\textstyle\times\mkern\thinmuskip$}}{}%
708 }{%
709 \discretionary{\hbox{$\m@th\scriptstyle\mkern\thinmuskip\times$}}%
710 {\hbox{$\m@th\scriptstyle\times\mkern\thinmuskip$}}{}%
711 }{%
712 \discretionary{\hbox{$\m@th\scriptscriptstyle\mkern\thinmuskip\times$}}%
713 {\hbox{$\m@th\scriptscriptstyle\times\mkern\thinmuskip$}}{}%
714 }%
715 \endgroup%
716 \penalty\binoppenalty%
717 }

Relations.
718 \SetBreakableRel{\propto}
719 \SetBreakableRel{\sqsubseteq}
720 \SetBreakableRel{\sqsupseteq}
721 \SetBreakableRel{\parallel}
722 \SetBreakableRel{\mid}
723 \SetBreakableRel{\dashv}
724 \SetBreakableRel{\vdash}
725 \SetBreakableRel{\leq} \SetBreakableRel{\le}
726 \SetBreakableRel{\geq} \SetBreakableRel{\ge}

```

```

727 \SetBreakableRel{\succ}
728 \SetBreakableRel{\prec}
729 \SetBreakableRel{\approx}
730 \SetBreakableRel{\succeq}
731 \SetBreakableRel{\preceq}
732 \SetBreakableRel{\supset}
733 \SetBreakableRel{\subset}
734 \SetBreakableRel{\supseteq}
735 \SetBreakableRel{\subseteq}
736 \SetBreakableRel{\in}
737 \SetBreakableRel{\ni} \SetBreakableRel{\owns}
738 \SetBreakableRel{\gg}
739 \SetBreakableRel{\ll}
740 \SetBreakableRel{\sim}
741 \SetBreakableRel{\simeq}
742 \SetBreakableRel{\perp}
743 \SetBreakableRel{\equiv}
744 \SetBreakableRel{\asymp}
745 \SetBreakableRel{\smile}
746 \SetBreakableRel{\frown}
747 \SetBreakableRel{\models}
748 \SetBreakableRel{\cong}
749 \SetBreakableRel{\notin}
750 \SetBreakableRel{\doteq}
751 \SetBreakableRel{\bowtie}
752 \SetBreakableRel{\neq} % Works well without \SetBreakableRel
753 \SetBreakableRel{\ne} % Works well without \SetBreakableRel

```

Arrows.

```

754 \SetBreakableRel{\nearrow}
755 \SetBreakableRel{\searrow}
756 \SetBreakableRel{\nrightarrow}
757 \SetBreakableRel{\swarrow}
758 \SetBreakableRel{\Leftrightarrow}
759 \SetBreakableRel{\Leftarrow}
760 \SetBreakableRel{\rightarrow}
761 \SetBreakableRel{\leftrightarrow}
762 \SetBreakableRel{\leftarrow} \SetBreakableRel{\gets}
763 \SetBreakableRel{\rightarrow} \SetBreakableRel{\to}
764 \SetBreakableRel{\leftharpoonup}
765 \SetBreakableRel{\leftharpoondown}
766 \SetBreakableRel{\rightharpoonup}
767 \SetBreakableRel{\rightharpoondown}
768 \SetBreakableRel{\longleftarrow}
769 \SetBreakableRel{\Longleftarrow}
770 \SetBreakableRel{\longrightarrow}
771 \SetBreakableRel{\Longrightarrow}
772 \SetBreakableRel{\longlefttrightarrow}
773 \SetBreakableRel{\Longlefttrightarrow}
774 \SetBreakableRel{\mapsto}
775 \SetBreakableRel{\longmapsto}
776 \SetBreakableRel{\hookrightarrow}
777 \SetBreakableRel{\hookleftarrow}
778 \SetBreakableRel{\rightleftharpoons}

```



Commands from latexsym.

```

779 \SetBreakableBin{\lhd}
780 \SetBreakableBin{\unlhd}
781 \SetBreakableBin{\rhd}
782 \SetBreakableBin{\unrhd}
783 \SetBreakableRel{\Join}
784 \SetBreakableRel{\leadsto}
785 \SetBreakableRel{\sqsubset}
786 \SetBreakableRel{\sqsupset}

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Support amsfonts package

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787 \@ifpackageloaded{amsfonts}{
788   \SetBreakableRel{\dashrightarrow} \SetBreakableRel{\dasharrow}
789   \SetBreakableRel{\dashleftarrow}
790   \SetBreakableRel{\vartriangleright}
791   \SetBreakableRel{\vartriangleleft}
792   \SetBreakableRel{\trianglerighteq}
793   \SetBreakableRel{\trianglelefteq}
794   \SetBreakableRel{\rightsquigarrow} \SetBreakableRel{\leadsto}
795 }{}

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Support amssymb package

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796 \@ifpackageloaded{amssymb}{
797   \SetBreakableBin{\boxdot}
798   \SetBreakableBin{\boxplus}
799   \SetBreakableBin{\boxtimes}
800   \SetBreakableBin{\centerdot}
801   \SetBreakableBin{\boxminus}
802   \SetBreakableBin{\veebar}
803   \SetBreakableBin{\barwedge}
804   \SetBreakableBin{\doublebarwedge}
805   \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
806   \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
807   \SetBreakableBin{\curlywedge}
808   \SetBreakableBin{\curlyvee}
809   \SetBreakableBin{\leftthreetimes}
810   \SetBreakableBin{\rightthreetimes}
811   \SetBreakableBin{\dotplus}
812   \SetBreakableBin{\intercal}
813   \SetBreakableBin{\circledcirc}
814   \SetBreakableBin{\circledast}
815   \SetBreakableBin{\circleddash}
816   \SetBreakableBin{\divideontimes}
817   \SetBreakableBin{\lessdot}
818   \SetBreakableBin{\gtrdot}
819   \SetBreakableBin{\ltimes}
820   \SetBreakableBin{\rtimes}
821   \SetBreakableBin{\smallsetminus}
822   \SetBreakableRel{\circlearrowright}
823   \SetBreakableRel{\circlearrowleft}
824   \SetBreakableRel{\leftrightharpoons}
825   \SetBreakableRel{\Vdash}
826   \SetBreakableRel{\Vvdash}
827   \SetBreakableRel{\vDash}
828   \SetBreakableRel{\twoheadrightarrow}

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829 \SetBreakableRel{\twoheadleftarrow}
830 \SetBreakableRel{\leftleftarrows}
831 \SetBreakableRel{\rightrightarrows}
832 \SetBreakableRel{\upuparrows}
833 \SetBreakableRel{\downdownarrows}
834 \SetBreakableRel{\upharpoonright} \SetBreakableRel{\restriction}
835 \SetBreakableRel{\downharpoonright}
836 \SetBreakableRel{\upharpoonleft}
837 \SetBreakableRel{\downharpoonleft}
838 \SetBreakableRel{\rightarrowtail}
839 \SetBreakableRel{\leftarrowtail}
840 \SetBreakableRel{\leftrightarrows}
841 \SetBreakableRel{\rightleftarrows}
842 \SetBreakableRel{\Lsh}
843 \SetBreakableRel{\Rsh}
844 \SetBreakableRel{\rightsquigarrow}
845 \SetBreakableRel{\leftrightsquigarrow}
846 \SetBreakableRel{\looparrowleft}
847 \SetBreakableRel{\looparrowright}
848 \SetBreakableRel{\circeq}
849 \SetBreakableRel{\succsim}
850 \SetBreakableRel{\gtrsim}
851 \SetBreakableRel{\gtrapprox}
852 \SetBreakableRel{\multimap}
853 \SetBreakableRel{\therefore}
854 \SetBreakableRel{\because}
855 \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
856 \SetBreakableRel{\triangleq}
857 \SetBreakableRel{\precsim}
858 \SetBreakableRel{\lessim}
859 \SetBreakableRel{\lessapprox}
860 \SetBreakableRel{\eqslantless}
861 \SetBreakableRel{\eqslantgtr}
862 \SetBreakableRel{\curlyeqprec}
863 \SetBreakableRel{\curlyeqsucc}
864 \SetBreakableRel{\preccurlyeq}
865 \SetBreakableRel{\leqq}
866 \SetBreakableRel{\leqslant}
867 \SetBreakableRel{\lessgtr}
868 \SetBreakableRel{\risingdotseq}
869 \SetBreakableRel{\fallingdotseq}
870 \SetBreakableRel{\succcurlyeq}
871 \SetBreakableRel{\geqq}
872 \SetBreakableRel{\geqslant}
873 \SetBreakableRel{\gtrless}
874 \SetBreakableRel{\vartriangleright}
875 \SetBreakableRel{\vartriangleleft}
876 \SetBreakableRel{\trianglerighteq}
877 \SetBreakableRel{\trianglelefteq}
878 \SetBreakableRel{\between}
879 \SetBreakableRel{\blacktriangleright}
880 \SetBreakableRel{\blacktriangleleft}
881 \SetBreakableRel{\vartriangle}
882 \SetBreakableRel{\eqcirc}

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883 \SetBreakableRel{\lesseqgtr}
884 \SetBreakableRel{\gtreqless}
885 \SetBreakableRel{\lesseqqgtr}
886 \SetBreakableRel{\gtreqqless}
887 \SetBreakableRel{\Rrightarrow}
888 \SetBreakableRel{\Lleftarrow}
889 \SetBreakableRel{\varpropto}
890 \SetBreakableRel{\smallsmile}
891 \SetBreakableRel{\smallfrown}
892 \SetBreakableRel{\Subset}
893 \SetBreakableRel{\Supset}
894 \SetBreakableRel{\subseteqq}
895 \SetBreakableRel{\supseteqq}
896 \SetBreakableRel{\bumpeq}
897 \SetBreakableRel{\Bumpeq}
898 \SetBreakableRel{\lll} \SetBreakableRel{\llless}
899 \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
900 \SetBreakableRel{\pitchfork}
901 \SetBreakableRel{\backsimeq}
902 \SetBreakableRel{\backsimeq}
903 \SetBreakableRel{\lvertneqq}
904 \SetBreakableRel{\gvertneqq}
905 \SetBreakableRel{\nleq}
906 \SetBreakableRel{\ngeq}
907 \SetBreakableRel{\nless}
908 \SetBreakableRel{\ngtr}
909 \SetBreakableRel{\nprec}
910 \SetBreakableRel{\nsucc}
911 \SetBreakableRel{\lneqq}
912 \SetBreakableRel{\gneqq}
913 \SetBreakableRel{\nleqslant}
914 \SetBreakableRel{\ngeqslant}
915 \SetBreakableRel{\lneq}
916 \SetBreakableRel{\gneq}
917 \SetBreakableRel{\npreceq}
918 \SetBreakableRel{\nsucceq}
919 \SetBreakableRel{\precnsim}
920 \SetBreakableRel{\succnsim}
921 \SetBreakableRel{\lnsim}
922 \SetBreakableRel{\gnsim}
923 \SetBreakableRel{\nleqq}
924 \SetBreakableRel{\ngeqq}
925 \SetBreakableRel{\precneqq}
926 \SetBreakableRel{\succneqq}
927 \SetBreakableRel{\precnapprox}
928 \SetBreakableRel{\succnapprox}
929 \SetBreakableRel{\lnapprox}
930 \SetBreakableRel{\gnapprox}
931 \SetBreakableRel{\nsim}
932 \SetBreakableRel{\ncong}
933 \SetBreakableRel{\varsubsetneq}
934 \SetBreakableRel{\varsupsetneq}
935 \SetBreakableRel{\nsubteqq}
936 \SetBreakableRel{\nsupseteqq}

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937 \SetBreakableRel{\subsetneqq}
938 \SetBreakableRel{\supsetneqq}
939 \SetBreakableRel{\varsubsetneqq}
940 \SetBreakableRel{\varsupsetneqq}
941 \SetBreakableRel{\subsetneq}
942 \SetBreakableRel{\supsetneq}
943 \SetBreakableRel{\nsubseteq}
944 \SetBreakableRel{\nsupseteq}
945 \SetBreakableRel{\nparallel}
946 \SetBreakableRel{\nmid}
947 \SetBreakableRel{\nshortmid}
948 \SetBreakableRel{\nshortparallel}
949 \SetBreakableRel{\nvdash}
950 \SetBreakableRel{\nVdash}
951 \SetBreakableRel{\nvDash}
952 \SetBreakableRel{\nVDash}
953 \SetBreakableRel{\ntrianglerighteq}
954 \SetBreakableRel{\ntrianglelefteq}
955 \SetBreakableRel{\ntriangleleft}
956 \SetBreakableRel{\ntriangleright}
957 \SetBreakableRel{\nleftarrow}
958 \SetBreakableRel{\nrightarrow}
959 \SetBreakableRel{\nLeftarrow}
960 \SetBreakableRel{\nRightarrow}
961 \SetBreakableRel{\nLeftrightarrow}
962 \SetBreakableRel{\nleftrightharrow}
963 \SetBreakableRel{\eqsim}
964 \SetBreakableRel{\shortmid}
965 \SetBreakableRel{\shortparallel}
966 \SetBreakableRel{\thicksim}
967 \SetBreakableRel{\thickapprox}
968 \SetBreakableRel{\approxeq}
969 \SetBreakableRel{\succapprox}
970 \SetBreakableRel{\precapprox}
971 \SetBreakableRel{\curvearrowleft}
972 \SetBreakableRel{\curvearrowright}
973 \SetBreakableRel{\backepsilon}
974 }{}

Support amstex package
975 \@ifpackageloaded{amstex}{
976 \SetBreakableRel{\vartriangleright} \SetBreakableRel{\rhd}
977 \SetBreakableRel{\vartriangleleft} \SetBreakableRel{\lhd}
978 \SetBreakableRel{\trianglerighteq} \SetBreakableRel{\unrhd}
979 \SetBreakableRel{\trianglelefteq} \SetBreakableRel{\unlhd}
980 \SetBreakableRel{\rightsquigarrow} \SetBreakableRel{\leadsto}
981 }{}

Support boisik package
982 \@ifpackageloaded{boisik}{
983 \SetMathOperator{\intup}
984 \SetOpenBracket{\binampersand}
985 \SetBreakableRel{\upharpoonright}
986 \SetBreakableRel{\downharpoonright}
987 \SetBreakableRel{\upharpoonleft}

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988 \SetBreakableRel{\downharpoonleft}
989 \SetBreakableRel{\leftrightharpoons}
990 \SetBreakableRel{\rightleftarrows}
991 \SetBreakableRel{\leftrightharpoons}
992 \SetBreakableRel{\leftleftarrows}
993 \SetBreakableRel{\rightrightarrows}
994 \SetBreakableRel{\upuparrows}
995 \SetBreakableRel{\downdownarrows}
996 \SetBreakableRel{\twoheadrightarrow}
997 \SetBreakableRel{\twoheadleftarrow}
998 \SetBreakableRel{\rightarrowtail}
999 \SetBreakableRel{\leftarrowtail}
1000 \SetBreakableRel{\rightsquigarrow}
1001 \SetBreakableRel{\leftrightsquigarrow}
1002 \SetBreakableRel{\Lsh}
1003 \SetBreakableRel{\Rsh}
1004 \SetBreakableRel{\looparrowleft}
1005 \SetBreakableRel{\looparrowright}
1006 \SetBreakableRel{\circlearrowright}
1007 \SetBreakableRel{\circlearrowleft}
1008 \SetBreakableRel{\curvearrowleft}
1009 \SetBreakableRel{\curvearrowright}
1010 \SetBreakableRel{\nleftarrow}
1011 \SetBreakableRel{\nrightarrow}
1012 \SetBreakableRel{\nleftrightarrow}
1013 \SetBreakableRel{\nLeftarrow}
1014 \SetBreakableRel{\nRightarrow}
1015 \SetBreakableRel{\nLeftrightarrow}
1016 \SetBreakableRel{\Lleftarrow}
1017 \SetBreakableRel{\Rrightarrow}
1018 \SetBreakableRel{\NLeftrightarrow}
1019 % \SetBreakableRel{\lhook}
1020 % \SetBreakableRel{\rhook}
1021 \SetBreakableRel{\multimap}
1022 \SetBreakableRel{\multimapdot}
1023 \SetBreakableRel{\therefore}
1024 \SetBreakableRel{\because}
1025 \SetBreakableRel{\between}
1026 \SetBreakableRel{\Vdash}
1027 \SetBreakableRel{\Vvdash}
1028 \SetBreakableRel{\VDash}
1029 \SetBreakableRel{\vDash}
1030 \SetBreakableRel{\smallsmile}
1031 \SetBreakableRel{\smallfrown}
1032 \SetBreakableRel{\shortmid}
1033 \SetBreakableRel{\shortparallel}
1034 \SetBreakableRel{\thickapprox}
1035 \SetBreakableBin{\divideontimes}
1036 \SetBreakableBin{\lessdot}
1037 \SetBreakableBin{\gtrdot}
1038 \SetBreakableRel{\bumpeq}
1039 \SetBreakableRel{\Bumpeq}
1040 \SetBreakableRel{\leqslant}
1041 \SetBreakableRel{\geqslant}

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1042 \SetBreakableRel{\eqslantless}
1043 \SetBreakableRel{\eqslantgtr}
1044 \SetBreakableRel{\curlyeqprec}
1045 \SetBreakableRel{\curlyeqsucc}
1046 \SetBreakableRel{\preccurlyeq}
1047 \SetBreakableRel{\succcurlyeq}
1048 \SetBreakableRel{\thicksim}
1049 \SetBreakableRel{\backsimeq}
1050 \SetBreakableRel{\eqsim}
1051 \SetBreakableRel{\backsimeq}
1052 \SetBreakableBin{\ltimes}
1053 \SetBreakableBin{\rtimes}
1054 \SetBreakableRel{\lll} \SetBreakableRel{\llless}
1055 \SetBreakableRel{\ggg} \SetBreakableRel{\gggtr}
1056 \SetBreakableRel{\triangleq}
1057 \SetBreakableRel{\circeq}
1058 \SetBreakableRel{\eqcirc}
1059 \SetBreakableRel{\doteqdot} \SetBreakableRel{\Doteq}
1060 \SetBreakableRel{\risingdotseq}
1061 \SetBreakableRel{\fallingdotseq}
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1063 \SetBreakableRel{\vartriangleright}
1064 \SetBreakableRel{\vartriangleleft}
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1066 \SetBreakableRel{\trianglelefteq}
1067 \SetBreakableRel{\blacktriangleright}
1068 \SetBreakableRel{\blacktriangleleft}
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1072 \SetBreakableBin{\boxminus}
1073 \SetBreakableBin{\boxtimes}
1074 \SetBreakableBin{\boxdot}
1075 \SetBreakableBin{\circledcirc}
1076 \SetBreakableBin{\circledast}
1077 \SetBreakableBin{\circleddash}
1078 \SetBreakableBin{\intercal}
1079 \SetBreakableRel{\prurel}
1080 \SetBreakableRel{\scurel}
1081 \SetBreakableRel{\disin}
1082 \SetBreakableRel{\nisd}
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1086 \SetBreakableRel{\bagmember}
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1088 \SetBreakableRel{\gvertneqq}
1089 \SetBreakableRel{\nleq}
1090 \SetBreakableRel{\ngeq}
1091 \SetBreakableRel{\nless}
1092 \SetBreakableRel{\ngtr}
1093 \SetBreakableRel{\nprec}
1094 \SetBreakableRel{\nsucc}
1095 \SetBreakableRel{\lneqq}

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1096 \SetBreakableRel{\gneqq}
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1100 \SetBreakableRel{\gneq}
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1102 \SetBreakableRel{\nsucceq}
1103 \SetBreakableRel{\nleqq}
1104 \SetBreakableRel{\ngeqq}
1105 \SetBreakableRel{\lnsim}
1106 \SetBreakableRel{\gnsim}
1107 \SetBreakableRel{\precnsim}
1108 \SetBreakableRel{\succnsim}
1109 \SetBreakableRel{\precneqq}
1110 \SetBreakableRel{\succneqq}
1111 \SetBreakableRel{\nsim}
1112 \SetBreakableRel{\ncong}
1113 \SetBreakableRel{\lnapprox}
1114 \SetBreakableRel{\gnapprox}
1115 \SetBreakableRel{\precnapprox}
1116 \SetBreakableRel{\succnapprox}
1117 \SetBreakableRel{\nsubset}
1118 \SetBreakableRel{\nsupset}
1119 \SetBreakableRel{\varsubsetneq}
1120 \SetBreakableRel{\varsupsetneq}
1121 \SetBreakableRel{\nsubseteqq}
1122 \SetBreakableRel{\nsupseteqq}
1123 \SetBreakableRel{\subseteqqq}
1124 \SetBreakableRel{\supseteqqq}
1125 \SetBreakableRel{\varsubsetneqq}
1126 \SetBreakableRel{\varsupsetneqq}
1127 \SetBreakableRel{\subsetneq}
1128 \SetBreakableRel{\supsetneq}
1129 \SetBreakableRel{\nsubseteq}
1130 \SetBreakableRel{\nsupseteq}
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1133 \SetBreakableRel{\nshortmid}
1134 \SetBreakableRel{\nshortparallel}
1135 \SetBreakableRel{\nvdash}
1136 \SetBreakableRel{\nVdash}
1137 \SetBreakableRel{\nvDash}
1138 \SetBreakableRel{\nVDash}
1139 \SetBreakableRel{\ntrianglerighteq}
1140 \SetBreakableRel{\ntrianglelefteq}
1141 \SetBreakableRel{\ntriangleleft}
1142 \SetBreakableRel{\ntriangleright}
1143 \SetBreakableRel{\precapprox}
1144 \SetBreakableRel{\succapprox}
1145 \SetBreakableRel{\precsim}
1146 \SetBreakableRel{\succsim}
1147 \SetBreakableRel{\lessim}
1148 \SetBreakableRel{\gtrsim}
1149 \SetBreakableRel{\lessapprox}

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1150 \SetBreakableRel{\gtrapprox}
1151 \SetBreakableRel{\leqq}
1152 \SetBreakableRel{\geqq}
1153 \SetBreakableRel{\lessgtr}
1154 \SetBreakableRel{\gtrless}
1155 \SetBreakableRel{\lesseqgtr}
1156 \SetBreakableRel{\gtreqless}
1157 \SetBreakableRel{\lesseqqgtr}
1158 \SetBreakableRel{\gtreqqlless}
1159 \SetBreakableRel{\Subset}
1160 \SetBreakableRel{\Supset}
1161 \SetBreakableBin{\Cup} \SetBreakableBin{\doublecup}
1162 \SetBreakableBin{\Cap} \SetBreakableBin{\doublecap}
1163 \SetBreakableRel{\subseteq}
1164 \SetBreakableRel{\supseteq}
1165 \SetBreakableBin{\curlywedge}
1166 \SetBreakableBin{\curlyvee}
1167 \SetBreakableBin{\veebar}
1168 \SetBreakableBin{\barwedge}
1169 \SetBreakableBin{\doublebarwedge}
1170 \SetBreakableBin{\leftthreetimes}
1171 \SetBreakableBin{\rightthreetimes}
1172 \SetBreakableBin{\smallsetminus}
1173 \SetBreakableRel{\approx}
1174 \SetBreakableBin{\dotplus}
1175 \SetBreakableRel{\pitchfork}
1176 \SetBreakableBin{\oblong}
1177 \SetBreakableBin{\talloblong}
1178 \SetBreakableBin{\sslash}
1179 \SetBreakableBin{\bbslash}
1180 \SetBreakableRel{\hash}
1181 \SetBreakableRel{\varhash}
1182 \SetBreakableBin{\convolution}
1183 \SetBreakableBin{\coAsterisk}
1184 \SetBreakableRel{\veeeq}
1185 \SetBreakableRel{\corresponds}
1186 \SetBreakableRel{\arceq}
1187 \SetBreakableRel{\CircledEq}
1188 \SetBreakableRel{\eqbumped}
1189 \SetBreakableRel{\dotminus}
1190 \SetBreakableRel{\kernelcontraction}
1191 \SetBreakableRel{\dotsim}
1192 \SetBreakableRel{\simrdots}
1193 \SetBreakableBin{\circplus}
1194 \SetBreakableBin{\dottimes}
1195 \SetBreakableBin{\vartimes}
1196 \SetBreakableBin{\merge}
1197 \SetBreakableBin{\veeonvee}
1198 \SetBreakableBin{\obslash}
1199 \SetBreakableBin{\otop}
1200 \SetBreakableBin{\obot}
1201 \SetBreakableBin{\oleft}
1202 \SetBreakableBin{\oright}
1203 \SetBreakableBin{\obar}

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1204 \SetBreakableBin{\otriangle}
1205 \SetBreakableBin{\olessthan}
1206 \SetBreakableBin{\ogreaterthan}
1207 \SetBreakableBin{\ovee}
1208 \SetBreakableBin{\owedge}
1209 \SetBreakableBin{\boxslash}
1210 \SetBreakableBin{\boxtop}
1211 \SetBreakableBin{\boxbot}
1212 \SetBreakableBin{\boxleft}
1213 \SetBreakableBin{\boxright}
1214 \SetBreakableBin{\boxbar}
1215 \SetBreakableBin{\boxslash}
1216 \SetBreakableBin{\boxtriangle}
1217 \SetBreakableBin{\boxast}
1218 \SetBreakableBin{\boxcircle}
1219 \SetBreakableBin{\boxdivision}
1220 \SetBreakableBin{\boxbox}
1221 \SetBreakableBin{\diamondop}
1222 \SetBreakableBin{\diamondminus}
1223 \SetBreakableBin{\diamondbar}
1224 \SetBreakableBin{\diamondtimes}
1225 \SetBreakableBin{\diamondplus}
1226 \SetBreakableBin{\diamondtriangle}
1227 \SetBreakableBin{\diamondcircle}
1228 \SetBreakableBin{\cupleftarrow}
1229 \SetBreakableBin{\varcup}
1230 \SetBreakableBin{\varcap}
1231 \SetBreakableBin{\varsqcup}
1232 \SetBreakableBin{\varsqcap}
1233 \SetBreakableRel{\sqsubset}
1234 \SetBreakableRel{\sqsupset}
1235 \SetBreakableRel{\inplus}
1236 \SetBreakableRel{\niplus}
1237 \SetBreakableRel{\varisins}
1238 \SetBreakableRel{\varnis}
1239 \SetBreakableRel{\subsetplus}
1240 \SetBreakableRel{\supsetplus}
1241 \SetBreakableRel{\subsetpluseq}
1242 \SetBreakableRel{\supsetpluseq}
1243 \SetBreakableBin{\nplus}
1244 \SetBreakableBin{\sqplus}
1245 \SetBreakableRel{\multimapboth}
1246 \SetBreakableRel{\multimapdotboth}
1247 \SetBreakableRel{\multimapdotbothB}
1248 \SetBreakableRel{\multimapdotbothA}
1249 \SetBreakableRel{\multimapinv}
1250 \SetBreakableRel{\multimapdotinv}
1251 \SetBreakableRel{\multimapbothvert}
1252 \SetBreakableRel{\multimapdotbothvert}
1253 \SetBreakableRel{\multimapdotbothBvert}
1254 \SetBreakableRel{\multimapdotbothAvert}
1255 \SetBreakableRel{\dfourier}
1256 \SetBreakableRel{\Dfourier}
1257 \SetBreakableRel{\ztransf}

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1258 \SetBreakableRel{\Ztransf}
1259 \SetBreakableRel{\Lt}
1260 \SetBreakableRel{\Gt}
1261 \SetBreakableBin{\leftslice}
1262 \SetBreakableBin{\rightslice}
1263 \SetBreakableRel{\trianglelefteqslant}
1264 \SetBreakableRel{\trianglerighteqslant}
1265 \SetBreakableBin{\Ydown}
1266 \SetBreakableBin{\Yup}
1267 \SetBreakableBin{\Yleft}
1268 \SetBreakableBin{\Yright}
1269 \SetBreakableRel{\dashVv}
1270 \SetBreakableRel{\DashV}
1271 \SetBreakableRel{\DashV}
1272 \SetBreakableRel{\dashV}
1273 \SetBreakableBin{\lbag}
1274 \SetBreakableBin{\rbag}
1275 \SetBreakableRel{\Perp}
1276 \SetBreakableBin{\moo}
1277 \SetBreakableBin{\baro}
1278 \SetBreakableBin{\pluscirc}
1279 \SetBreakableBin{\minuso}
1280 \SetBreakableRel{\llcurly}
1281 \SetBreakableRel{\ggcurly}
1282 \SetBreakableRel{\strictfi}
1283 \SetBreakableRel{\strictif}
1284 \SetBreakableRel{\ac}
1285 \SetBreakableBin{\varintercal}
1286 \SetBreakableRel{\equalparallel}
1287 \SetBreakableBin{\plustrif}
1288 \SetBreakableBin{\smashtimes}
1289 \SetBreakableRel{\lrcir}
1290 \SetBreakableRel{\gtcir}
1291 \SetBreakableRel{\glj}
1292 \SetBreakableBin{\Vee}
1293 \SetBreakableBin{\Wedge}
1294 \SetBreakableBin{\fatsemi}
1295 \SetBreakableRel{\forkv}
1296 \SetBreakableRel{\topfork}
1297 \SetBreakableRel{\twoheaduparrow}
1298 \SetBreakableRel{\twoheaddownarrow}
1299 \SetBreakableRel{\mapsfrom}
1300 \SetBreakableRel{\mapsup}
1301 \SetBreakableRel{\mapdown}
1302 \SetBreakableRel{\nVleftarrow}
1303 \SetBreakableRel{\nVrightarrow}
1304 \SetBreakableRel{\rightarrowcircle}
1305 \SetBreakableRel{\narrowcorner}
1306 \SetBreakableRel{\narrowcorner}
1307 \SetBreakableRel{\barovernorthwestarrow}
1308 \SetBreakableRel{\carriagereturn}
1309 \SetBreakableRel{\linefeed}
1310 \SetBreakableRel{\leftzigzagarrow}
1311 \SetBreakableRel{\Nwarrow}

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1312 \SetBreakableRel{\Nearrow}
1313 \SetBreakableRel{\Swarrow}
1314 \SetBreakableRel{\Searrow}
1315 \SetBreakableRel{\nHuparrow}
1316 \SetBreakableRel{\nHdownarrow}
1317 \SetBreakableRel{\updownarrowbar}
1318 \SetBreakableRel{\barleftarrow}
1319 \SetBreakableRel{\barrightarrow}
1320 \SetBreakableRel{\leftsquigarrow}
1321 \SetBreakableRel{\rightsquigarrow}
1322 \SetBreakableRel{\leftrightsquigarrow}
1323 \SetBreakableRel{\downziguezagarrow}
1324 \SetBreakableRel{\rightthreearrows}
1325 \SetBreakableRel{\barleftarrowrightarrowbar}
1326 \SetBreakableRel{\leftdasharrow}
1327 \SetBreakableRel{\rightdasharrow}
1328 \SetBreakableRel{\updasharrow}
1329 \SetBreakableRel{\downdasharrow}
1330 \SetBreakableRel{\upwhitearrow}
1331 \SetBreakableRel{\downwhitearrow}
1332 \SetBreakableRel{\whitearrowupfrombar}
1333 \SetBreakableRel{\whitearrowuppedestal}
1334 \SetBreakableRel{\whitearrowuppedestalthbar}
1335 \SetBreakableRel{\whitearrowuppedestaltvbar}
1336 \SetBreakableRel{\twoheadwhiteuparrow}
1337 \SetBreakableRel{\twoheadwhiteuparrowpedestal}
1338 \SetBreakableRel{\updownwhitearrow}
1339 \SetBreakableRel{\leftblackarrow}
1340 \SetBreakableRel{\rightblackarrow}
1341 \SetBreakableRel{\upblackarrow}
1342 \SetBreakableRel{\downblackarrow}
1343 \SetBreakableRel{\leftrightblackarrow}
1344 \SetBreakableRel{\updownblackarrow}
1345 \SetBreakableRel{\curlyveeuparrow}
1346 \SetBreakableRel{\curlyveedownarrow}
1347 \SetBreakableRel{\curlywedgearchuparrow}
1348 \SetBreakableRel{\curlywedgedownarrow}
1349 \SetBreakableRel{\Mapsfrom}
1350 \SetBreakableRel{\Mapsto}
1351 \SetBreakableRel{\leftwhitearrow}
1352 \SetBreakableRel{\rightwhitearrow}
1353 \SetBreakableRel{\leftwhiteroundarrow}
1354 \SetBreakableRel{\rightwhiteroundarrow}
1355 \SetBreakableRel{\righttoleftarrow}
1356 \SetBreakableRel{\lefttorightarrow}
1357 \SetBreakableRel{\looparrowdownleft}
1358 \SetBreakableRel{\looparrowdownright}
1359 \SetBreakableRel{\uptodownarrow}
1360 \SetBreakableRel{\downtouparrow}
1361 \SetBreakableRel{\nnearrow}
1362 \SetBreakableRel{\nssearrow}
1363 \SetBreakableRel{\nswarrow}
1364 \SetBreakableRel{\nsswarrow}
1365 \SetBreakableRel{\curvearrowleft}

```

```

1366 \SetBreakableRel{\curvearrowright}
1367 \SetBreakableRel{\curvearrowleft}
1368 \SetBreakableRel{\curvearrowleft}
1369 \SetBreakableRel{\curvearrowright}
1370 \SetBreakableRel{\curvearrowleft}
1371 \SetBreakableRel{\leftrightharpoonup}
1372 \SetBreakableRel{\eqleftrightharpoonup}
1373 \SetBreakableRel{\dLsh}
1374 \SetBreakableRel{\dRsh}
1375 \SetBreakableRel{\leftarrowtriangle}
1376 \SetBreakableRel{\rightarrowtriangle}
1377 \SetBreakableRel{\leftrightharpoonuptriangle}
1378 \SetBreakableRel{\leftarrowtriangle}
1379 \SetBreakableRel{\rightarrowtriangle}
1380 \SetBreakableRel{\leftrightharpoonuptriangle}
1381 }{}

```

Support euler package

```

1382 \@ifpackageloaded{euler}{% euler
1383 \SetBreakableRel{\uparrow}
1384 \SetBreakableRel{\downarrow}
1385 \SetBreakableRel{\updownarrow}
1386 \SetBreakableRel{\Uparrow}
1387 \SetBreakableRel{\Downarrow}
1388 \SetBreakableRel{\Updownarrow}
1389 % \SetBreakableRel{\lhook}
1390 % \SetBreakableRel{\rhook}
1391 }{}

```

Support fourier package

```

1392 \@ifpackageloaded{fourier}{
1393 \SetMathOperator{\iint}
1394 \SetMathOperator{\iiint}
1395 \SetMathOperator{\oiint}
1396 \SetMathOperator{\oiiint}
1397 \SetMathOperator{\slashint}
1398 \SetOpenBracket{\llbracket}
1399 \SetBreakableRel{\leqslant}
1400 \SetBreakableRel{\geqslant}
1401 \SetBreakableRel{\parallelslant}
1402 \SetBreakableRel{\vDash}
1403 \SetBreakableRel{\blacktriangleleft}
1404 \SetBreakableRel{\blacktriangleright}
1405 \SetBreakableRel{\nleqslant}
1406 \SetBreakableRel{\ngeqslant}
1407 \SetBreakableRel{\nparallel}
1408 \SetBreakableRel{\nparallelslant}
1409 \SetBreakableRel{\nvDash}
1410 \SetBreakableBin{\intercal}
1411 \SetBreakableRel{\varsubsetneq}
1412 \SetBreakableRel{\notowns}
1413 \SetBreakableBin{\smallsetminus}
1414 \SetBreakableRel{\subsetneqq}
1415 \SetBreakableRel{\rightrightarrows}
1416 \SetBreakableRel{\leftleftarrows}

```

```

1417 \SetBreakableRel{\curvearrowleft}
1418 \SetBreakableRel{\curvearrowright}
1419 \SetBreakableRel{\Downarrow}
1420 }{}
      Support Lucida font packages (lucbmath, lucidabr, lucmin, lucmtime, luctime)
1421 \ifnum\@ifpackageloaded{lucbmath}{1}{%
1422 \@ifpackageloaded{lucidabr}{1}{%
1423 \@ifpackageloaded{lucmin}{1}{%
1424 \@ifpackageloaded{lucmtime}{1}{%
1425 \@ifpackageloaded{luctime}{1}{0}}}}=1\relax%
1426 \SetMathOperator{\surfint}
1427 \SetMathOperator{\midint}
1428 \SetMathOperator{\midoint}
1429 \SetMathOperator{\midsurfint}
1430 \SetMathOperator{\largeint}
1431 \SetBreakableRel{\leadsfrom}
1432 \SetBreakableRel{\defineequal}
1433 \SetBreakableRel{\notequiv}
1434 \SetBreakableRel{\notapprox}
1435 \SetBreakableRel{\notasympt}
1436 \SetBreakableRel{\notsubset}
1437 \SetBreakableRel{\notsupset}
1438 \SetBreakableRel{\notsim}
1439 \SetBreakableRel{\notsubseteq}
1440 \SetBreakableRel{\notsupseteq}
1441 \SetBreakableRel{\notsimeq}
1442 \SetBreakableRel{\notsqsubseteq}
1443 \SetBreakableRel{\notsqsupseteq}
1444 \SetBreakableRel{\notcong}
1445 \SetBreakableRel{\notni}
1446 \SetBreakableBin{\boxdot}
1447 \SetBreakableBin{\boxplus}
1448 \SetBreakableBin{\boxtimes}
1449 \SetBreakableBin{\centerdot}
1450 \SetBreakableRel{\circlearrowright}
1451 \SetBreakableRel{\circlearrowleft}
1452 \SetBreakableRel{\leftrightharpoons}
1453 \SetBreakableBin{\boxminus}
1454 \SetBreakableRel{\Vdash}
1455 \SetBreakableRel{\Vvdash}
1456 \SetBreakableRel{\vDash}
1457 \SetBreakableRel{\twoheadrightarrow}
1458 \SetBreakableRel{\twoheadleftarrow}
1459 \SetBreakableRel{\leftleftarrows}
1460 \SetBreakableRel{\rightrightarrows}
1461 \SetBreakableRel{\upuparrows}
1462 \SetBreakableRel{\downdownarrows}
1463 \SetBreakableRel{\upharpoonright}
1464 \SetBreakableRel{\downharpoonright}
1465 \SetBreakableRel{\upharpoonleft}
1466 \SetBreakableRel{\downharpoonleft}
1467 \SetBreakableRel{\rightarrowtail}
1468 \SetBreakableRel{\leftarrowtail}
1469 \SetBreakableRel{\leftrightarrows}

```

```

1470 \SetBreakableRel{\rightleftarrows}
1471 \SetBreakableRel{\Lsh}
1472 \SetBreakableRel{\Rsh}
1473 \SetBreakableRel{\rightsquigarrow}
1474 \SetBreakableRel{\leftsquigarrow}
1475 \SetBreakableRel{\leftrightsquigarrow}
1476 \SetBreakableRel{\looparrowleft}
1477 \SetBreakableRel{\looparrowright}
1478 \SetBreakableRel{\circeq}
1479 \SetBreakableRel{\succsim}
1480 \SetBreakableRel{\gtrsim}
1481 \SetBreakableRel{\gtrapprox}
1482 \SetBreakableRel{\multimap}
1483 \SetBreakableRel{\image}
1484 \SetBreakableRel{\original}
1485 \SetBreakableRel{\therefore}
1486 \SetBreakableRel{\because}
1487 \SetBreakableRel{\doteqdot}
1488 \SetBreakableRel{\triangleq}
1489 \SetBreakableRel{\precsim}
1490 \SetBreakableRel{\lesssim}
1491 \SetBreakableRel{\lessapprox}
1492 \SetBreakableRel{\eqslantless}
1493 \SetBreakableRel{\eqslantgtr}
1494 \SetBreakableRel{\curlyeqprec}
1495 \SetBreakableRel{\curlyeqsucc}
1496 \SetBreakableRel{\preccurlyeq}
1497 \SetBreakableRel{\leqq}
1498 \SetBreakableRel{\leqslant}
1499 \SetBreakableRel{\lessgtr}
1500 \SetBreakableRel{\risingdotseq}
1501 \SetBreakableRel{\fallingdotseq}
1502 \SetBreakableRel{\succcurlyeq}
1503 \SetBreakableRel{\geqq}
1504 \SetBreakableRel{\geqslant}
1505 \SetBreakableRel{\gtrless}
1506 \SetBreakableRel{\vartriangleright}
1507 \SetBreakableRel{\vartriangleleft}
1508 \SetBreakableRel{\trianglerighteq}
1509 \SetBreakableRel{\trianglelefteq}
1510 \SetBreakableRel{\between}
1511 \SetBreakableRel{\blacktriangleright}
1512 \SetBreakableRel{\blacktriangleleft}
1513 \SetBreakableRel{\vartriangle}
1514 \SetBreakableRel{\eqcirc}
1515 \SetBreakableRel{\lesseqgtr}
1516 \SetBreakableRel{\gtreqless}
1517 \SetBreakableRel{\lesseqgtr}
1518 \SetBreakableRel{\gtreqless}
1519 \SetBreakableRel{\Rrightarrow}
1520 \SetBreakableRel{\Lleftarrow}
1521 \SetBreakableBin{\veebar}
1522 \SetBreakableBin{\barwedge}
1523 \SetBreakableRel{\varpropto}

```

```

1524 \SetBreakableRel{\smallsmile}
1525 \SetBreakableRel{\smallfrown}
1526 \SetBreakableRel{\Subset}
1527 \SetBreakableRel{\Supset}
1528 \SetBreakableBin{\Cup}
1529 \SetBreakableBin{\Cap}
1530 \SetBreakableBin{\curlywedge}
1531 \SetBreakableBin{\curlyvee}
1532 \SetBreakableBin{\leftthreetimes}
1533 \SetBreakableBin{\rightthreetimes}
1534 \SetBreakableRel{\subseteq}
1535 \SetBreakableRel{\supseteq}
1536 \SetBreakableRel{\bumpeq}
1537 \SetBreakableRel{\Bumpeq}
1538 \SetBreakableRel{\lll}
1539 \SetBreakableRel{\ggg}
1540 \SetBreakableRel{\pitchfork}
1541 \SetBreakableBin{\dotplus}
1542 \SetBreakableRel{\backsimeq}
1543 \SetBreakableRel{\backsimeq}
1544 \SetBreakableBin{\intercal}
1545 \SetBreakableBin{\circledcirc}
1546 \SetBreakableBin{\circledast}
1547 \SetBreakableBin{\circleddash}
1548 \SetBreakableRel{\lvertneqq}
1549 \SetBreakableRel{\gvertneqq}
1550 \SetBreakableRel{\nleq}
1551 \SetBreakableRel{\ngeq}
1552 \SetBreakableRel{\nless}
1553 \SetBreakableRel{\ngtr}
1554 \SetBreakableRel{\nprec}
1555 \SetBreakableRel{\nsucc}
1556 \SetBreakableRel{\lneqq}
1557 \SetBreakableRel{\gneqq}
1558 \SetBreakableRel{\nleqslant}
1559 \SetBreakableRel{\ngeqslant}
1560 \SetBreakableRel{\lneq}
1561 \SetBreakableRel{\gneq}
1562 \SetBreakableRel{\npreceq}
1563 \SetBreakableRel{\nsucceq}
1564 \SetBreakableRel{\precnsim}
1565 \SetBreakableRel{\succnsim}
1566 \SetBreakableRel{\lnsim}
1567 \SetBreakableRel{\gnsim}
1568 \SetBreakableRel{\nleqq}
1569 \SetBreakableRel{\ngeqq}
1570 \SetBreakableRel{\precneqq}
1571 \SetBreakableRel{\succneqq}
1572 \SetBreakableRel{\precnapprox}
1573 \SetBreakableRel{\succnapprox}
1574 \SetBreakableRel{\lnapprox}
1575 \SetBreakableRel{\gnapprox}
1576 \SetBreakableRel{\nsim}
1577 \SetBreakableRel{\ncong}

```

```

1578 \SetBreakableRel{\diagup}
1579 \SetBreakableRel{\diagdown}
1580 \SetBreakableRel{\varsubsetneq}
1581 \SetBreakableRel{\varsupsetneq}
1582 \SetBreakableRel{\nsubseteqq}
1583 \SetBreakableRel{\nsupseteqq}
1584 \SetBreakableRel{\subseteqq}
1585 \SetBreakableRel{\supseteqq}
1586 \SetBreakableRel{\varsubsetneqq}
1587 \SetBreakableRel{\varsupsetneqq}
1588 \SetBreakableRel{\subseteq}
1589 \SetBreakableRel{\supseteq}
1590 \SetBreakableRel{\nsubseteq}
1591 \SetBreakableRel{\nsupseteq}
1592 \SetBreakableRel{\nparallel}
1593 \SetBreakableRel{\nmid}
1594 \SetBreakableRel{\nshortmid}
1595 \SetBreakableRel{\nshortparallel}
1596 \SetBreakableRel{\nvdash}
1597 \SetBreakableRel{\nVdash}
1598 \SetBreakableRel{\nvDash}
1599 \SetBreakableRel{\nVDash}
1600 \SetBreakableRel{\ntrianglerighteq}
1601 \SetBreakableRel{\ntrianglelefteq}
1602 \SetBreakableRel{\ntriangleleft}
1603 \SetBreakableRel{\ntriangleright}
1604 \SetBreakableRel{\nleftarrow}
1605 \SetBreakableRel{\nrightarrow}
1606 \SetBreakableRel{\nLeftarrow}
1607 \SetBreakableRel{\nRightarrow}
1608 \SetBreakableRel{\nLeftrightarrow}
1609 \SetBreakableRel{\nleftrightharrow}
1610 \SetBreakableBin{\divideontimes}
1611 \SetBreakableRel{\eqsim}
1612 \SetBreakableRel{\lessdot}
1613 \SetBreakableRel{\gtrdot}
1614 \SetBreakableBin{\ltimes}
1615 \SetBreakableBin{\rtimes}
1616 \SetBreakableRel{\shortmid}
1617 \SetBreakableRel{\shortparallel}
1618 \SetBreakableBin{\smallsetminus}
1619 \SetBreakableRel{\thicksim}
1620 \SetBreakableRel{\thickapprox}
1621 \SetBreakableRel{\approx}
1622 \SetBreakableRel{\succapprox}
1623 \SetBreakableRel{\preccapprox}
1624 \SetBreakableRel{\curvearrowleft}
1625 \SetBreakableRel{\curvearrowright}
1626 \SetBreakableRel{\backepsilon}
1627 \fi

Support mathbbol package
1628 \@ifpackageloaded{mathbbol}{
1629 \SetOpenBracket{\Langle}
1630 \SetOpenBracket{\Lparen}

```



```

1631 }{}
    Support mathtools/empheq packages
1632 \@ifpackageloaded{mathtools}{
1633   \SetBreakableRel{\vcentcolon}
1634   \SetBreakableRel{\dblcolon}
1635   \SetBreakableRel{\coloneqq}
1636   \SetBreakableRel{\Coloneqq}
1637   \SetBreakableRel{\coloneq}
1638   \SetBreakableRel{\Coloneq}
1639   \SetBreakableRel{\eqqcolon}
1640   \SetBreakableRel{\Eqqcolon}
1641   \SetBreakableRel{\eqcolon}
1642   \SetBreakableRel{\Eqcolon}
1643   \SetBreakableRel{\colonapprox}
1644   \SetBreakableRel{\Colonapprox}
1645   \SetBreakableRel{\colonsim}
1646   \SetBreakableRel{\Colonsim}
1647 }{}

    Support mdwmath package
1648 \@ifpackageloaded{mdwmath}{
1649   \SetBreakableBin{\bitand}
1650   \begingroup
1651     \catcode'\&\active
1652     \xdef&{\noexpand\brokenbin{\rmathbr@mathchar{'\&}}}
1653   \endgroup
1654   \AtBeginDocument{\mathcode'\&=32768 }
1655 }{}

    Support sbmm package
1656 \@ifpackageloaded{sbmm}{
1657   \SetOpenBracket{\Lparen}
1658 }{}

    Support stmaryrd package
1659 \@ifpackageloaded{stmaryrd}{
1660   \SetOpenBracket{\Lbag}
1661   \SetOpenBracket{\llparenthesis}
1662   \SetOpenBracket{\binampersand}
1663   \SetOpenBracket{\llfloor}
1664   \SetOpenBracket{\llceil}
1665   \SetOpenBracket{\llbracket}
1666   \SetBreakableRel{\shortleftarrow}
1667   \SetBreakableRel{\shortrightarrow}
1668   \SetBreakableRel{\shortuparrow}
1669   \SetBreakableRel{\shortdownarrow}
1670   \SetBreakableBin{\Yup}
1671   \SetBreakableBin{\Ydown}
1672   \SetBreakableBin{\Yleft}
1673   \SetBreakableBin{\Yright}
1674   \SetBreakableBin{\varcurlyvee}
1675   \SetBreakableBin{\varcurlywedge}
1676   \SetBreakableBin{\minuso}
1677   \SetBreakableBin{\baro}
1678   \SetBreakableBin{\sslash}

```

```

1679 \SetBreakableBin{\bbslash}
1680 \SetBreakableBin{\moo}
1681 \SetBreakableBin{\varotimes}
1682 \SetBreakableBin{\varoast}
1683 \SetBreakableBin{\varobar}
1684 \SetBreakableBin{\varodot}
1685 \SetBreakableBin{\varoslash}
1686 \SetBreakableBin{\varobslash}
1687 \SetBreakableBin{\varocircle}
1688 \SetBreakableBin{\varoplus}
1689 \SetBreakableBin{\varominus}
1690 \SetBreakableBin{\boxast}
1691 \SetBreakableBin{\boxbar}
1692 \SetBreakableBin{\boxdot}
1693 \SetBreakableBin{\boxslash}
1694 \SetBreakableBin{\boxbslash}
1695 \SetBreakableBin{\boxcircle}
1696 \SetBreakableBin{\boxbox}
1697 \SetBreakableBin{\boxempty}
1698 \SetBreakableBin{\merge}
1699 \SetBreakableBin{\vartimes}
1700 \SetBreakableBin{\fatsemi}
1701 \SetBreakableRel{\sswarrow}
1702 \SetBreakableRel{\ssearrow}
1703 \SetBreakableRel{\curlywedgeuparrow}
1704 \SetBreakableRel{\curlywedgedownarrow}
1705 \SetBreakableBin{\fatslash}
1706 \SetBreakableBin{\fatbslash}
1707 \SetBreakableBin{\lbag}
1708 \SetBreakableBin{\rbag}
1709 \SetBreakableBin{\varbigcirc}
1710 \SetBreakableRel{\leftrightharroweq}
1711 \SetBreakableRel{\curlyveedownarrow}
1712 \SetBreakableRel{\curlyveeuparrow}
1713 \SetBreakableRel{\nnwarrow}
1714 \SetBreakableRel{\nnearrow}
1715 \SetBreakableBin{\leftslice}
1716 \SetBreakableBin{\rightslice}
1717 \SetBreakableBin{\varolessthan}
1718 \SetBreakableBin{\varogreaterthan}
1719 \SetBreakableBin{\varovee}
1720 \SetBreakableBin{\varowedge}
1721 \SetBreakableBin{\talloblong}
1722 \SetBreakableBin{\interleave}
1723 \SetBreakableBin{\obar}
1724 \SetBreakableBin{\obslash}
1725 \SetBreakableBin{\olessthan}
1726 \SetBreakableBin{\ogreaterthan}
1727 \SetBreakableBin{\ovee}
1728 \SetBreakableBin{\owedge}
1729 \SetBreakableBin{\oblong}
1730 \SetBreakableRel{\inplus}
1731 \SetBreakableRel{\niplus}
1732 \SetBreakableBin{\nplus}

```

```

1733 \SetBreakableRel{\subsetplus}
1734 \SetBreakableRel{\supsetplus}
1735 \SetBreakableRel{\subsetpluseq}
1736 \SetBreakableRel{\supsetpluseq}
1737 \SetBreakableRel{\trianglelefteqslant}
1738 \SetBreakableRel{\trianglerighteqslant}
1739 \SetBreakableRel{\ntrianglelefteqslant}
1740 \SetBreakableRel{\ntrianglerighteqslant}
1741 \SetBreakableRel{\arrownot}
1742 \SetBreakableRel{\Arrownot}
1743 \SetBreakableRel{\Mapstochar}
1744 \SetBreakableRel{\mapsfromchar}
1745 \SetBreakableRel{\Mapsfromchar}
1746 \SetBreakableBin{\leftrightharowtriangle}
1747 \SetBreakableRel{\leftarrowtriangle}
1748 \SetBreakableRel{\rightarrowtriangle}
1749 \SetBreakableRel{\longarrownot}
1750 \SetBreakableRel{\Longarrownot}
1751 \SetBreakableRel{\Mapsto}
1752 \SetBreakableRel{\mapsfrom}
1753 \SetBreakableRel{\Mapsfrom}
1754 \SetBreakableRel{\Longmapsto}
1755 \SetBreakableRel{\longmapsfrom}
1756 \SetBreakableRel{\Longmapsfrom}
1757 }{}

Support wasysym package
1758 \@ifpackageloaded{wasysym}{
1759 \SetMathOperator{\varint}
1760 \SetMathOperator{\iint}
1761 \SetMathOperator{\iiint}
1762 \SetMathOperator{\varoint}
1763 \SetMathOperator{\oiint}
1764 \SetBreakableBin{\LHD}
1765 \SetBreakableBin{\RHD}
1766 \SetBreakableRel{\apprle}
1767 \SetBreakableRel{\apprge}
1768 \SetBreakableRel{\wasypropto}
1769 \SetBreakableRel{\invneg}
1770 \SetBreakableBin{\ocircle}
1771 \SetBreakableRel{\logof}
1772 }{}

1773 } % \rmathbr@patch@commands

Execute \rmathbr@patch@commands depending on options:
1774 \ifrmathbr@patch@begindocument
1775 \AtBeginDocument{\rmathbr@patch@commands}
1776 \else
1777 \rmathbr@patch@commands
1778 \fi

Switch to active math mode at \begin{document}
1779 \AtBeginDocument{%
1780 \mathcode'\==32768% "8000
1781 \mathcode'\<=32768

```

```

1782 \mathcode'\>=32768
1783 \mathcode'\+=32768
1784 \ifmathbr@kv@brokenminus
1785   \mathcode'\-=32768
1786   \fi
1787 \mathcode'\*=32768
1788 \mathcode'\(=32768
1789 \mathcode'\ [=32768 %\]
1790 \mathcode'\,=32768
1791 \mathcode'\;=32768
1792 \mathcode'\:=32768
1793 \@ifundefined{resetMathstrut@}{}{% fix amsmath
1794   \let\rmathbr@orig@resetMathstrut=\resetMathstrut@
1795   \gdef\resetMathstrut@{%
1796     \mathcode'\(=16424% "4028
1797     \rmathbr@orig@resetMathstrut
1798     \mathcode'\(=32768% "8000
1799   }
1800   \gdef\newmcodes@{%
1801     \mathcode'\ '=39
1802     \mathcode'\ *=42
1803     \mathcode'\.=24890% "613A
1804     \mathcode'\-=45
1805     \mathcode'\/=47
1806     \mathcode'\:=24634% "603A
1807     \relax
1808   }
1809 }%
1810 }

```

Patch for bm package:

```

1811 \@ifpackageloaded{bm}{%
1812   \let\rmathbr@save@bm@general=\bm@general
1813   \def\bm@general#1#2#3#4#5{
1814     \rmathbr@save@bm@general{#1}{#2}{%
1815       \let\nobr\copy
1816       \def\brokenrel##1{\unvcopy{\brokenrel{##1}}}
1817       \def\brokenbin##1{\unvcopy{\brokenbin{##1}}}
1818       \def\brokeninner##1{\unvcopy{\brokeninner{##1}}}
1819       \def\rmathbr@mathop##1{\unvcopy{\rmathbr@mathop{##1}}}
1820       \begingroup\catcode'\_ \active\lccode'\_ \lowercase{\endgroup\def~}##1{\unvcopy{_{##1}}}
1821       \begingroup\catcode'\^ \active\lccode'\^ \lowercase{\endgroup\def~}##1{\unvcopy{^ {##1}}}
1822       #3}{#4}{#5}
1823     }
1824   \PackageInfo{rmathbr}{Note: 'bm' package has been patched}{%
1825 }{}

```

Patch for xy package:

```

1826 \@ifpackageloaded{xy}{%
1827   \ifnum\rmathbr@kv@scriptsmode>0\relax
1828     \let\rmathbr@save@xy=\xy
1829     \let\rmathbr@save@endxy=\endxy
1830     \def\xy{\begingroup\catcode'\^7 \catcode'\_8\rmathbr@save@xy}
1831     \def\endxy{\rmathbr@save@endxy\endgroup}
1832     \PackageInfo{rmathbr}{Note: \string\xy and \string\endxy commands from 'xy'

```

```
1833  
1834 \fi  
1835 }{}
```

```
package have been patched}{}%
```