

# MdSymbol: A Math Symbol Font

Sebastian Schubert  
schubert.seb@googlemail.com

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## 1 Introduction

MdSymbol is a font of mathematical symbols designed as a companion to Adobe Myriad Pro, but it might also fit well to other contemporary typefaces. To use this font in a  $\text{\LaTeX}$

document, add the command

```
\usepackage[{options}]{MdSymbol}
```

to the preamble of your document. With default settings, it redefines most of the standard mathematical symbols and makes available many new ones (see Section 5). With the `onlysansmath` option, the symbols are only defined for two new math versions, `sans` and `sansbold`. This allows to easily use two distinct math fonts in one document. For details and the other available options see section 3.1.

## Acknowledgements

The MdSymbol font is heavily based on FdSymbol<sup>1</sup>, another math symbol font, designed by Michael Ummels. All supporting scripts (to e.g. convert the MetaFont sources to Type 1 fonts) were written by him. I got a lot of help in `comp.text.tex` so basically the main code implementing the `onlysansmath` functionality is written by Bruno Le Floch, Enrico Gregorio, Lars Madsen and Heiko Oberdiek; the ugly parts and bugs by me.

## 2 Interferences with other packages

The MdSymbol package is incompatible with the `amssymb` and `amsfonts` packages. It automatically loads the `amsmath` and `textcomp` packages. If you want to pass options to these packages, you can either load these packages before MdSymbol or you can include the options in the `\documentclass` command.

## 3 Options

### 3.1 Font selection

MdSymbol comes in four weights, which are (in increasing order) Light, Regular, Semibold and Bold. Of these, Light and Regular are suitable for normal math typesetting, while Semibold and Bold can be used for bold math typesetting. Using the options **normalweight** and **boldweight**, you can select which weights are used. For example, to use the Light weight as the normal weight in math, add `normalweight=Light` to the package options. Analogously, to use the Bold weight with `\boldmath` or `\boldsymbol`, add `boldweight=Bold` to the package options. By default, Regular and Semibold are used. Additionally, it is possible to use a suitable weight automatically depending on the font size. By selecting `autolight` or `autoregular` for `normalweight`, Light or Regular weight, respectively, is used for font sizes larger than

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<sup>1</sup><http://www.ctan.org/pkg/fdsymbol/>

6pt and Regular or Semibold, respectively, for smaller sizes. Similarly, `autosemibold` for `boldweight` selects Semibold for bold symbols larger than 6pt and Bold below 6pt.

### 3.2 Math Symbols only in sans serif math

With the **`onlysansmath`** option, MdSymbol does not change already defined math symbols but declares two new math versions, `sans` and `sansbold`, and defines its symbols to be only used within these math versions. Use the command `\mathversion{sans}` or `\mathversion{sansbold}` to switch to this math version. Also single input character symbols (e.g. `+`, `-`, `(`, `)`) adapt to the math version except when used with a delimiter size increasing command like `\big`.<sup>2</sup> As a workaround, use the corresponding full command instead (`\big\lparen`).

### 3.3 Miscellaneous

MdSymbol uses and combines some symbols of the text font (section 5.7). The option **`retainmissing`** prevents this.

In order to use MdSymbol with different text fonts, it is possible to scale the fonts by an arbitrary factor. This can be achieved with the option **`scale`**. For example, to use the fonts at 90 % of their original size, you can add `scale=0.9` to the package options. Finally, it is possible to increase the height of delimiters slightly (by 20 % in text size and by 25 % in `\big` size). This can be achieved by activating the option **`largedelims`**. Use this option if you want to combine MdSymbol with a text font that has rather tall delimiters.

The following table summarises all options (keys) that can be used with the MdSymbol package. Values that correspond to the default behaviour of the package are marked by an asterisk.

| Key                        | Values   |
|----------------------------|--|
| <code>normalweight</code>  | Light, Regular*, <code>autolight</code> , <code>autoregular</code> |
| <code>boldweight</code>    | Semibold*, Bold, <code>autosemibold</code>                         |
| <code>onlysansmath</code>  | true, false*   |
| <code>retainmissing</code> | true, false*   |
| <code>scale</code>         | $\langle factor \rangle$   |
| <code>largedelims</code>   | true, false*   |

<sup>2</sup>Any help to solve this problem is highly welcome!

## 4 Version history

Version 0.1: First version

Version 0.1a: Always declare `sansmathtabular` and `sansmathboldtabular` if `onlysansmath` option is given

## 5 Symbols

The MdSymbol package provides the following symbols.

### 5.1 Ordinary symbols

|     |   |   |  |  |                            |
|-----|---|---|--|--|----------------------------|
| ... | <code>\hdots</code>                     |   |  |  | <code>\mdwhtlozenge</code> |
| :   | <code>\vdots</code>                     | ◆ |  | <code>\medblacklozenge,</code>         |                            |
| ⋯   | <code>\udots, \adots</code>             |   |  | <code>\blacklozenge,</code>            |                            |
| ⋱   | <code>\ddots</code>                     |   |  | <code>\mdlgbklozenge,</code>           |                            |
| ∴   | <code>\righttherefore</code>            |   |  | <code>\mdblklozenge</code>             |                            |
| ∵   | <code>\uptherefore, \therefore</code>   | ◊ |  | <code>\lozengeminus</code>             |                            |
| ∴   | <code>\lefttherefore</code>             | ☆ |  | <code>\largewhitestar</code>           |                            |
| ∵   | <code>\downtherefore, \because</code>   | ★ |  | <code>\largeblackstar, \bigstar</code> |                            |
| ∴   | <code>\squaredots</code>                | ∞ |  | <code>\infty</code>                    |                            |
| ¬   | <code>\neg, \lnot</code>                | ∠ |  | <code>\angle</code>                    |                            |
| ⊢   | <code>\backneg, \invnot, \invneg</code> | ⊃ |  | <code>\revangle</code>                 |                            |
| ⊣   | <code>\turnedneg, \turnednot</code>     | ⌢ |  | <code>\measuredangle</code>            |                            |
| ⊤   | <code>\turnedbackneg</code>             | ⌣ |  | <code>\revmeasuredangle,</code>        |                            |
| △   | <code>\largetriangleup</code>           |   |  | <code>\measuredangleleft</code>        |                            |
| ▽   | <code>\largetriangleup</code>           | ⌢ |  | <code>\sphericalangle</code>           |                            |
| ∅   | <code>\emptyset, \diameter,</code>      | ∇ |  | <code>\sphericalangleup</code>         |                            |
|     | <code>\varnothing</code>                | ⋙ |  | <code>\sphericalangleleft,</code>      |                            |
| ∅   | <code>\reemptyset</code>                |   |  | <code>\revsphericalangle,</code>       |                            |
| ○   | <code>\largecircle, \lgwhtcircle</code> |   |  | <code>\gtlpar</code>                   |                            |
| ●   | <code>\largeblackcircle</code>          | ⋈ |  | <code>\sphericalangledown</code>       |                            |
| □   | <code>\largesquare, \lgwhtsquare</code> | ⊥ |  | <code>\rightangle</code>               |                            |
| ■   | <code>\largeblacksquare,</code>         | ⊥ |  | <code>\measuredrightangle</code>       |                            |
|     | <code>\lgblksquare</code>               | ⊥ |  | <code>\rightanglesquare,</code>        |                            |
| ◇   | <code>\smalllozenge,</code>             |   |  | <code>\rightanglesqr</code>            |                            |
|     | <code>\smwhtlozenge</code>              | ⊥ |  | <code>\measuredrightangledot,</code>   |                            |
| ◆   | <code>\smallblacklozenge,</code>        |   |  | <code>\rightanglemdot</code>           |                            |
|     | <code>\smbklozenge</code>               | , |  | <code>\prime</code>                    |                            |
| ◊   | <code>\medlozenge, \lozenge,</code>     | ′ |  | <code>\backprime</code>                |                            |
|     | <code>\mdlwhtlozenge,</code>            | ✓ |  | <code>\checkmark</code>                |                            |

|                  |                               |              |                            |
|------------------|-------------------------------|--------------|----------------------------|
| $\mathcal{L}$    | <code>\lightning,</code>      | $\flat$      | <code>\flat</code>         |
|                  | <code>\downzigzagarrow</code> | $\natural$   | <code>\natural</code>      |
| $\diamond$       | <code>\diamondsuit</code>     | $\sharp$     | <code>\sharp</code>        |
| $\blacklozenge$  | <code>\vardiamondsuit</code>  | $\aleph$     | <code>\aleph</code>        |
| $\heartsuit$     | <code>\heartsuit</code>       | $\beth$      | <code>\beth</code>         |
| $\blackheart$    | <code>\varheartsuit</code>    | $\gimel$     | <code>\gimel</code>        |
| $\spadesuit$     | <code>\spadesuit</code>       | $\daleth$    | <code>\daleth</code>       |
| $\clubsuit$      | <code>\clubsuit</code>        | $\wp$        | <code>\wp</code>           |
| $\blackclubsuit$ | <code>\maltese</code>         | $\nabla$     | <code>\nabla</code>        |
| $\star$          | <code>\starofdavid</code>     | $\top$       | <code>\top</code>          |
| $\searrow$       | <code>\sector</code>          | $\bot$       | <code>\bot</code>          |
| $\forall$        | <code>\forall</code>          | $/$          | <code>/, \mathslash</code> |
| $\exists$        | <code>\exists</code>          | $\backslash$ | <code>\backslash</code>    |
| $\nexists$       | <code>\nexists</code>         | $ $          | <code> , \vert</code>      |
| $\Finv$          | <code>\Finv</code>            | $\V$         | <code>\V</code>            |
| $\Game$          | <code>\Game</code>            | $\Vvert$     | <code>\Vvert</code>        |
| $\complement$    | <code>\complement</code>      |              |                            |

## 5.2 Binary operators

|                |  |          |                                    |
|----------------|--|----------|------------------------------------|
| $\cdot$        | <code>\cdot</code>                         | $\times$ | <code>\dottimes</code>             |
| $\centerdot$   | <code>\centerdot</code>                    | $\times$ | <code>\timesbar</code>             |
| $\ddot{\cdot}$ | <code>\hdotdot</code>                      | $\div$   | <code>\divideontimes</code>        |
| $\vdots$       | <code>\vdotdot</code>                      | $\int$   | <code>\intprod</code>              |
| $\dot{\cdot}$  | <code>\udotdot</code>                      | $\int$   | <code>\intprodr</code>             |
| $\ddot{\cdot}$ | <code>\ddotdotdot</code>                   | $\times$ | <code>\leftthreetimes</code>       |
| $-$            | <code>-, \minus</code>                     | $\times$ | <code>\rightthreetimes</code>      |
| $/$            | <code>\medslash, \smalldivslash</code>     | $\times$ | <code>\dtimes, \btimes</code>      |
| $\backslash$   | <code>\medbackslash, \smallsetminus</code> | $\times$ | <code>\rtimes</code>               |
| $+$            | <code>+, \plus</code>                      | $\times$ | <code>\utimes, \ttimes</code>      |
| $\times$       | <code>\times</code>                        | $\times$ | <code>\ltimes</code>               |
| $\dot{-}$      | <code>\dotminus</code>                     | $\times$ | <code>\lrtimes</code>              |
| $\dot{-}$      | <code>\minusdot</code>                     | $\times$ | <code>\upbowtie, \hourglass</code> |
| $\div$         | <code>\div</code>                          | $\times$ | <code>\rightY</code>               |
| $\dot{-}$      | <code>\minusfdots</code>                   | $\times$ | <code>\upY</code>                  |
| $\dot{-}$      | <code>\minusrdots</code>                   | $\times$ | <code>\leftY</code>                |
| $\pm$          | <code>\pm</code>                           | $\times$ | <code>\downY</code>                |
| $\mp$          | <code>\mp</code>                           | $\wedge$ | <code>\wedge, \land</code>         |
| $\dot{+}$      | <code>\dotplus</code>                      | $\vee$   | <code>\vee, \lor</code>            |
| $\dot{+}$      | <code>\plusdot</code>                      | $\wedge$ | <code>\wedgedot</code>             |
|                |  | $\vee$   | <code>\veedot</code>               |

|                                |  |                       |  |
|--------------------------------|--|-----------------------|--|
| $\mathbb{M}$                   | <code>\doublewedge, \wedgeonwedge</code>                             | $\nabla$              | <code>\medtriangledown,</code><br><code>\triangledown</code>   |
| $\mathbb{W}$                   | <code>\doublevee, \veeonwee</code>                                   | $\blacktriangleright$ | <code>\medblacktriangleright,</code><br><code>\blacktriangleright</code>                             |
| $\curlywedge$                  | <code>\curlywedge</code>   | $\blacktriangleup$    | <code>\medblacktriangleup,</code><br><code>\blacktriangleup</code>                                   |
| $\curlyvee$                    | <code>\curlyvee</code>   | $\blacktriangleleft$  | <code>\medblacktriangleleft,</code><br><code>\blacktriangleleft</code>                               |
| $\bar{\wedge}$                 | <code>\barwedge</code>   | $\blacktriangledown$  | <code>\medblacktriangledown,</code><br><code>\blacktriangledown</code>                               |
| $\underline{\vee}$             | <code>\veebar</code>   | $\bigtriangleup$      | <code>\bigtriangleup</code>  |
| $\overline{\wedge}$            | <code>\doublebarwedge</code>   | $\bigtriangledown$    | <code>\bigtriangledown</code>  |
| $\underline{\underline{\vee}}$ | <code>\veedoublebar</code>   | $\circ$               | <code>\smallcircle, \circ,</code><br><code>\smwhtcircle</code>                                       |
| $\cup$                         | <code>\cup</code>  | $\bullet$             | <code>\smallblackcircle, \bullet,</code><br><code>\smbkcircle</code>                                 |
| $\cap$                         | <code>\cap</code>  | $\bigcirc$            | <code>\medcircle, \mdlgwhtcircle,</code><br><code>\mdwhtcircle</code>                                |
| $\mathbb{U}$                   | <code>\doublecup, \Cup</code>  | $\bullet$             | <code>\medblackcircle,</code><br><code>\mdlgbkcircle,</code><br><code>\mdblkcicle</code>             |
| $\mathbb{M}$                   | <code>\doublecap, \Cap</code>  | $\ominus$             | <code>\ominus</code>   |
| $\cup$                         | <code>\cupdot</code>   | $\oplus$              | <code>\overt, \circledvert</code>  |
| $\cap$                         | <code>\capdot</code>   | $\oslash$             | <code>\oslash</code>   |
| $\mathbb{U}$                   | <code>\cupplus, \uplus</code>  | $\oslash$             | <code>\obackslash, \obslash</code>   |
| $\mathbb{M}$                   | <code>\capplus</code>  | $\oplus$              | <code>\oplus</code>  |
| $\sqcup$                       | <code>\sqcup</code>  | $\otimes$             | <code>\otimes</code>   |
| $\sqcap$                       | <code>\sqcap</code>  | $\odot$               | <code>\odot</code>   |
| $\mathbb{U}$                   | <code>\doublesqcup, \Sqcup</code>                                    | $\odot$               | <code>\ocirc, \circledcirc</code>  |
| $\mathbb{M}$                   | <code>\doublesqcap, \Sqcap</code>                                    | $\odot$               | <code>\oast, \circledast</code>  |
| $\sqcup$                       | <code>\sqcupdot</code>   | $\odot$               | <code>\odash, \circleddash</code>  |
| $\sqcap$                       | <code>\sqcapdot</code>   | $\odot$               | <code>\oequal, \circledequal</code>  |
| $\mathbb{U}$                   | <code>\sqcupplus</code>  | $\bigcirc$            | <code>\bigcirc</code>  |
| $\mathbb{M}$                   | <code>\sqcapplus</code>  | $\square$             | <code>\smallsquare, \smwhtsquare</code>  |
| $\lrcorner$                    | <code>\pullback</code>   | $\blacksquare$        | <code>\smallblacksquare,</code><br><code>\smbksquare</code>  |
| $\rarcorn$                     | <code>\pushout</code>  | $\square$             | <code>\medsquare, \square, \Box,</code><br><code>\mdlgwhtsquare,</code><br><code>\mdwhtsquare</code> |
| $\blacktriangleright$          | <code>\smalltriangleright</code>                                     | $\blacksquare$        | <code>\medblacksquare,</code><br><code>\mdlgbksquare,</code>   |
| $\blacktriangleup$             | <code>\smalltriangleup</code>  |                       |  |
| $\blacktriangleleft$           | <code>\smalltriangleleft</code>                                      |                       |  |
| $\blacktriangledown$           | <code>\smalltriangledown</code>                                      |                       |  |
| $\blacktriangleright$          | <code>\smallblacktriangleright</code>                                |                       |  |
| $\blacktriangleup$             | <code>\smallblacktriangleup</code>                                   |                       |  |
| $\blacktriangleleft$           | <code>\smallblacktriangleleft</code>                                 |                       |  |
| $\blacktriangledown$           | <code>\smallblacktriangledown</code>                                 |                       |  |
| $\blacktriangleright$          | <code>\medtriangleright,</code><br><code>\triangleright</code>       |                       |  |
| $\blacktriangleup$             | <code>\medtriangleup, \triangle,</code><br><code>\vartriangle</code> |                       |  |
| $\blacktriangleleft$           | <code>\medtriangleleft,</code><br><code>\triangleleft</code>         |                       |  |

|                      |   |                     |  |
|----------------------|---|---------------------|--|
| $\square$            | <code>\mdblksquare</code>   | $\diamond$          | <code>\diamondslash</code>                                     |
| $\boxminus$          | <code>\boxminus</code>  | $\diamondbackslash$ | <code>\diamondbackslash,</code><br><code>\diamondbslash</code> |
| $\boxvert$           | <code>\boxvert,\boxbar</code>   | $\diamondplus$      | <code>\diamondplus</code>                                      |
| $\boxslash$          | <code>\boxslash,\boxdiag</code>   | $\diamondtimes$     | <code>\diamondtimes</code>                                     |
| $\boxbackslash$      | <code>\boxbackslash,\boxbslash</code>   | $\diamonddot$       | <code>\diamonddot,\diamondcdot</code>                          |
| $\boxplus$           | <code>\boxplus</code>   | $\diamond\diamond$  | <code>\diamond\diamond</code>                                  |
| $\boxtimes$          | <code>\boxtimes</code>  | $\star$             | <code>\smallwhitestar,</code><br><code>\smwhitestar</code>     |
| $\boxdot$            | <code>\boxdot</code>  | $\star$             | <code>\smallblackstar,\star</code>                             |
| $\boxbox$            | <code>\boxbox</code>  | $\star$             | <code>\medwhitestar</code>                                     |
| $\smalllozenge$      | <code>\smalllozenge,\lozenge,</code><br><code>\smwhitediamond</code>                                  | $\star$             | <code>\medblackstar,\medstar</code>                            |
| $\smallblacklozenge$ | <code>\smallblacklozenge,</code><br><code>\blacklozenge,</code><br><code>\smblozenge</code>           | $*$                 | <code>*,\ast</code>  |
| $\medlozenge$        | <code>\medlozenge,\Diamond,</code><br><code>\mdlgwhitediamond,</code><br><code>\mdwhitediamond</code> | $\intercal$         | <code>\intercal</code>   |
| $\medblacklozenge$   | <code>\medblacklozenge,</code><br><code>\mdlgblklozenge,</code><br><code>\mdblklozenge</code>         | $\wr$               | <code>\wreath,\wr</code>                                       |
| $\lozenge$           | <code>\lozenge</code>   | $\amalg$            | <code>\amalg</code>  |
| $\diamond$           | <code>\diamond</code>   | $\lhd$              | <code>\lhd</code>  |
| $\diamond$           | <code>\diamond</code>   | $\rhd$              | <code>\rhd</code>  |
| $\diamond$           | <code>\diamond</code>   | $\unlhd$            | <code>\unlhd</code>  |
| $\diamond$           | <code>\diamond</code>   | $\unrhd$            | <code>\unrhd</code>  |
| $\diamond$           | <code>\diamond</code>   | $/$                 | <code>\divslash</code>   |
| $\diamond$           | <code>\diamond</code>   | $\setminus$         | <code>\setminus</code>   |

### 5.3 Relations







































































|              |                                      |                  |                                   |
|--------------|--------------------------------------|------------------|-----------------------------------|
| $=$          | <code>=,\equal,\Relbar</code>        | $\doteq$         | <code>\doteq</code>               |
| $\equiv$     | <code>\equiv</code>                  | $\eqdot$         | <code>\eqdot</code>               |
| $\sim$       | <code>\sim</code>                    | $\doteq$         | <code>\Doteq</code>               |
| $\backsimeq$ | <code>\backsimeq</code>              | $\fallingdotseq$ | <code>\fallingdotseq</code>       |
| $\approx$    | <code>\approx</code>                 | $\risingdotseq$  | <code>\risingdotseq</code>        |
| $\approx$    | <code>\triplesim,\approxident</code> | $\coloneq$       | <code>\coloneq,\coloneqq</code>   |
| $\approx$    | <code>\simeq</code>                  | $\eqcolon$       | <code>\eqcolon,\eqqcolon</code>   |
| $\approx$    | <code>\backsimeq</code>              | $\smile$         | <code>\smile,\smallsmile</code>   |
| $\approx$    | <code>\eqsim</code>                  | $\frown$         | <code>\frown,\smallfrown</code>   |
| $\approx$    | <code>\cong</code>                   | $\smilefrown$    | <code>\smilefrown,\asymp</code>   |
| $\approx$    | <code>\backcong</code>               | $\frownsmile$    | <code>\frownsmile,\closure</code> |
| $\approx$    | <code>\dotcong</code>                | $\smileeq$       | <code>\smileeq</code>             |
| $\approx$    | <code>\approxeq</code>               | $\frowneq$       | <code>\frowneq,\arceq</code>      |
| $\approx$    | <code>\bumpeq</code>                 | $\eqcirc$        | <code>\eqcirc</code>              |
| $\approx$    | <code>\bumpeq</code>                 | $\circeq$        | <code>\circeq</code>              |
| $\approx$    | <code>\Bumpeq</code>                 | $\wedgeeq$       | <code>\wedgeeq,\hateq</code>      |

|                          |  |                          |                                     |
|--------------------------|--|--------------------------|-------------------------------------|
| $\varepsilon$            | <code>\veeeq</code>                      | $\sqsupset$              | <code>\sqsupseteq</code>            |
| $\equiv$                 | <code>\stareq</code>                     | $\sqsubseteq$            | <code>\sqsubseteqeq</code>          |
| $\trianglelefteq$        | <code>\triangleleeq, \triangleleq</code> | $\sqsupseteq$            | <code>\sqsupseteqeq</code>          |
| $\in$                    | <code>\in</code>                         | $\sqsubseteqeq$          | <code>\sqsubseteqeqq</code>         |
| $\ni$                    | <code>\owns, \ni</code>                  | $\sqsupseteqeq$          | <code>\sqsupseteqeqq</code>         |
| $<$                      | <code>&lt;, \less</code>                 | $\Ssqsubset$             | <code>\Ssqsubset</code>             |
| $>$                      | <code>&gt;, \gtr</code>                  | $\Ssqsupset$             | <code>\Ssqsupset</code>             |
| $\leq$                   | <code>\leq, \le</code>                   | $\subset$                | <code>\subset</code>                |
| $\geq$                   | <code>\geq, \ge</code>                   | $\supset$                | <code>\supseteq</code>              |
| $\leqslant$              | <code>\leqslant</code>                   | $\subseteq$              | <code>\subseteqeq</code>            |
| $\geqslant$              | <code>\geqslant</code>                   | $\supseteq$              | <code>\supseteqeq</code>            |
| $\leqq$                  | <code>\leqq</code>                       | $\subseteqeq$            | <code>\subseteqeqq</code>           |
| $\geqq$                  | <code>\geqq</code>                       | $\supseteqeq$            | <code>\supseteqeqq</code>           |
| $\lesssim$               | <code>\lesssim</code>                    | $\Subset$                | <code>\Subset</code>                |
| $\gtrsim$                | <code>\gtrsim</code>                     | $\Supset$                | <code>\Supset</code>                |
| $\lessapprox$            | <code>\lessapprox</code>                 | $\prec$                  | <code>\prec</code>                  |
| $\gtrapprox$             | <code>\gtrapprox</code>                  | $\succ$                  | <code>\succ</code>                  |
| $\lessgtr$               | <code>\lessgtr</code>                    | $\preceq$                | <code>\preceq</code>                |
| $\gtrless$               | <code>\gtrless</code>                    | $\succeq$                | <code>\succeq</code>                |
| $\lesseqgtr$             | <code>\lesseqgtr</code>                  | $\preccurlyeq$           | <code>\preccurlyeq</code>           |
| $\gtreqless$             | <code>\gtreqless</code>                  | $\succcurlyeq$           | <code>\succcurlyeq</code>           |
| $\lesseqqgtr$            | <code>\lesseqqgtr</code>                 | $\preceqq$               | <code>\preceqq</code>               |
| $\gtreqqless$            | <code>\gtreqqless</code>                 | $\succeqq$               | <code>\succeqq</code>               |
| $\lesseqslantgtr, \lesq$ | <code>\lesseqslantgtr, \lesq</code>      | $\prec\sim$              | <code>\prec\sim</code>              |
| $\gtreqslantless, \gesl$ | <code>\gtreqslantless, \gesl</code>      | $\succ\sim$              | <code>\succ\sim</code>              |
| $\ll$                    | <code>\ll</code>                         | $\precapprox$            | <code>\precapprox</code>            |
| $\gg$                    | <code>\gg</code>                         | $\succapprox$            | <code>\succapprox</code>            |
| $\lll, \lllless$         | <code>\lll, \lllless</code>              | $\prec\dot{\phantom{x}}$ | <code>\prec\dot{\phantom{x}}</code> |
| $\ggg, \gggtr$           | <code>\ggg, \gggtr</code>                | $\gtrdot$                | <code>\gtrdot</code>                |
| $\lessclosed,$           | <code>\lessclosed,</code>                | $\leqdot$                | <code>\leqdot</code>                |
| $\vartriangleleft$       | <code>\vartriangleleft</code>            | $\geqdot$                | <code>\geqdot</code>                |
| $\vartriangleright$      | <code>\vartriangleright</code>           | $\leqslantdot, \lesdot$  | <code>\leqslantdot, \lesdot</code>  |
| $\trianglelefteq$        | <code>\trianglelefteq</code>             | $\geqslantdot, \gesdot$  | <code>\geqslantdot, \gesdot</code>  |
| $\geqclosed,$            | <code>\geqclosed,</code>                 | $\eqslantless$           | <code>\eqslantless</code>           |
| $\trianglerighteq$       | <code>\trianglerighteq</code>            | $\eqslantgtr$            | <code>\eqslantgtr</code>            |
| $\lesscc, \ltcc$         | <code>\lesscc, \ltcc</code>              | $\curlyeqprec$           | <code>\curlyeqprec</code>           |
| $\gtrcc, \gtcc$          | <code>\gtrcc, \gtcc</code>               | $\curlyeqsucc$           | <code>\curlyeqsucc</code>           |
| $\leqslcc, \lescc$       | <code>\leqslcc, \lescc</code>            | $\thicksim$              | <code>\thicksim</code>              |
| $\geqslcc, \gescc$       | <code>\geqslcc, \gescc</code>            | $\thickapprox$           | <code>\thickapprox</code>           |
| $\sqsubset$              | <code>\sqsubset</code>                   | $\rightarrow$            | <code>\rightarrow, \to</code>       |
|                          |  | $\uparrow$               | <code>\uparrow</code>               |



|                   |                                   |                   |                                     |
|-------------------|-----------------------------------|-------------------|-------------------------------------|
| $\leftarrow$      | <code>\leftarrow, \gets</code>    | $\Downarrow$      | <code>\downmapsto, \mapsdown</code> |
| $\downarrow$      | <code>\downarrow</code>           | $\Rightarrow$     | <code>\Rightmapsto, \Mapsto</code>  |
| $\nearrow$        | <code>\nearrow</code>             | $\Uparrow$        | <code>\Upmapsto, \Mapsup</code>     |
| $\nwarrow$        | <code>\nwarrow</code>             | $\Leftarrow$      | <code>\Leftmapsto, \Mapsfrom</code> |
| $\swarrow$        | <code>\swarrow</code>             | $\Downarrow$      | <code>\Downmapsto, \Mapsdown</code> |
| $\searrow$        | <code>\searrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\Rightarrow$     | <code>\Rightarrow</code>          | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\Uparrow$        | <code>\Uparrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\Leftarrow$      | <code>\Leftarrow</code>           | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\Downarrow$      | <code>\Downarrow</code>           | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nearrow$        | <code>\Nearrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nwarrow$        | <code>\Nwarrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\swarrow$        | <code>\Swarrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\searrow$        | <code>\Searrow</code>             | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\leftrightarrow$ | <code>\leftrightarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\updownarrow$    | <code>\updownarrow</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nearrow$        | <code>\neswarrow</code>           | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nwarrow$        | <code>\nwsearrow</code>           | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\leftrightarrow$ | <code>\leftrightarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\updownarrow$    | <code>\leftrightarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nearrow$        | <code>\leftrightarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nwarrow$        | <code>\leftrightarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\rightarrow$     | <code>\twoheadrightarrow</code>   | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\uparrow$        | <code>\twoheaduparrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\leftarrow$      | <code>\twoheadleftarrow</code>    | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\downarrow$      | <code>\twoheaddownarrow</code>    | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nearrow$        | <code>\twoheadnearrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nwarrow$        | <code>\twoheadnwarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\swarrow$        | <code>\twoheadswarrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\searrow$        | <code>\twoheadsearrow</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\rightarrow$     | <code>\rightarrowtail</code>      | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\uparrow$        | <code>\uparrowtail</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\leftarrow$      | <code>\leftarrowtail</code>       | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\downarrow$      | <code>\downarrowtail</code>       | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nearrow$        | <code>\nearrowtail</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\nwarrow$        | <code>\nwarrowtail</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\swarrow$        | <code>\swarrowtail</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\searrow$        | <code>\searrowtail</code>         | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\mapsto$         | <code>\mapsto, \mapsto</code>     | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\upmapsto$       | <code>\upmapsto, \mapsto</code>   | $\hookrightarrow$ | <code>\hookrightarrow</code>        |
| $\leftmapsto$     | <code>\leftmapsto, \mapsto</code> | $\hookrightarrow$ | <code>\hookrightarrow</code>        |

|                            |   |                      |                                      |
|----------------------------|---|----------------------|--------------------------------------|
| $\nwarrow$                 | <code>\nwseharpoonnesw</code>           | $\Psi$               | <code>\downpitchfork</code>          |
| $\leftrightharpoonup$      | <code>\leftrightharpoonupdownup</code>  | $\Rightarrow$        | <code>\rightrightarrows</code>       |
| $\updownharpoonrightleft$  | <code>\updownharpoonrightleft</code>    | $\Uparrow$           | <code>\upuparrows</code>             |
| $\nearrow$                 | <code>\neswharpoonsenw</code>           | $\Leftarrow$         | <code>\leftleftarrows</code>         |
| $\nwseharpoonswne$         | <code>\nwseharpoonswne</code>           | $\Downarrow$         | <code>\downdownarrows</code>         |
| $\rightleftharpoons$       | <code>\rightleftharpoons</code>         | $\nearrow$           | <code>\nene arrows</code>            |
| $\updownharpoons,$         | <code>\updownharpoons,</code>           | $\nwarrow$           | <code>\nwnwarrows</code>             |
| $\updownharpoonsleftright$ | <code>\updownharpoonsleftright</code>   | $\swarrow$           | <code>\swswarrows</code>             |
| $\nearrow$                 | <code>\neswharpoons</code>              | $\searrow$           | <code>\sesearrows</code>             |
| $\searrow$                 | <code>\senwharpoons</code>              | $\rightleftarrows$   | <code>\rightleftarrows</code>        |
| $\leftrightharpoons$       | <code>\leftrightharpoons</code>         | $\Updownarrow$       | <code>\updownarrows</code>           |
| $\downupharpoons,$         | <code>\downupharpoons,</code>           | $\nearrow$           | <code>\neswarrows</code>             |
| $\downupharpoonsleftright$ | <code>\downupharpoonsleftright</code>   | $\nwarrow$           | <code>\nwsearrows</code>             |
| $\swarrow$                 | <code>\swneharpoons</code>              | $\leftrightharpoons$ | <code>\leftrightharpoons</code>      |
| $\nwseharpoons$            | <code>\nwseharpoons</code>              | $\Updownarrow$       | <code>\downuparrows</code>           |
| $\rightarrow$              | <code>\rightarrow,</code>               | $\swarrow$           | <code>\swnearrows</code>             |
|                            | <code>\dashrightarrow,</code>           | $\searrow$           | <code>\senwarrows</code>             |
|                            | <code>\dasharrow</code>                 | $\rightsquigarrow$   | <code>\rightarrow, \leadsto,</code>  |
| $\uparrow$                 | <code>\upbkarrow</code>                 |                      | <code>\rightsquigarrow,</code>       |
| $\leftarrow$               | <code>\leftbkarrow,</code>              |                      | <code>\rightarrowcurvedarrow</code>  |
|                            | <code>\dashleftarrow</code>             | $\uparrow$           | <code>\varupwavedarrow</code>        |
| $\downarrow$               | <code>\downbkarrow</code>               | $\leftarrow$         | <code>\varleftwavedarrow</code>      |
| $\nearrow$                 | <code>\nebkarrow</code>                 | $\downarrow$         | <code>\downwavedarrow</code>         |
| $\nwarrow$                 | <code>\nwbkarrow</code>                 | $\rightsquigarrow$   | <code>\varrightwavedarrow</code>     |
| $\swarrow$                 | <code>\swbkarrow</code>                 | $\uparrow$           | <code>\upwavedarrow</code>           |
| $\searrow$                 | <code>\sebkarrow</code>                 | $\leftarrow$         | <code>\leftwavedarrow,</code>        |
| $\rightarrow$              | <code>\rightspoon, \multimap</code>     |                      | <code>\leftsquigarrow,</code>        |
| $\uparrow$                 | <code>\upspoon, \circim</code>          |                      | <code>\leftcurvedarrow</code>        |
| $\leftarrow$               | <code>\leftspoon, \multimapinv</code>   | $\downarrow$         | <code>\vardownwavedarrow</code>      |
| $\downarrow$               | <code>\downspoon, \midcir</code>        | $\leftrightarrow$    | <code>\leftrightwavedarrow,</code>   |
| $\rightarrow$              | <code>\rightblackspoon</code>           |                      | <code>\leftrightsquigarrow</code>    |
| $\uparrow$                 | <code>\upblackspoon</code>              | $\Updownarrow$       | <code>\updownwavedarrow</code>       |
| $\leftarrow$               | <code>\leftblackspoon</code>            | $\leftrightarrow$    | <code>\varleftrightwavedarrow</code> |
| $\downarrow$               | <code>\downblackspoon</code>            | $\S$                 | <code>\varupdownwavedarrow</code>    |
| $\rightarrow$              | <code>\leftrightspoon, \dualmap</code>  | $\rightsquigarrow$   | <code>\cwoverarcarrow,</code>        |
| $\rightarrow$              | <code>\leftrightblackspoon</code>       |                      | <code>\curvearrowright</code>        |
| $\rightarrow$              | <code>\blackwhitespoon, \imageof</code> | $\curvearrowleft$    | <code>\cwleftarcarrow</code>         |
| $\rightarrow$              | <code>\whiteblackspoon, \origof</code>  | $\rightsquigarrow$   | <code>\cwunderarcarrow</code>        |
| $\rightarrow$              | <code>\rightpitchfork</code>            | $\downarrow$         | <code>\cwrightarcarrow</code>        |
| $\uparrow$                 | <code>\uppitchfork, \pitchfork</code>   | $\rightsquigarrow$   | <code>\cwnwarcarrow,</code>          |
| $\leftarrow$               | <code>\leftpitchfork</code>             |                      | <code>\rightarrowcurvedarrow</code>  |




















































|   |   |   |                                       |
|---|---|---|---------------------------------------|
|    | <code>\cswarcarrow,</code><br><code>\upleftcurvedarrow</code>   |    | <code>\cwcirculararrowup</code>       |
|    | <code>\cwsearcarrow,</code><br><code>\leftdowncurvedarrow</code>  |    | <code>\cwcirculararrowleft</code>     |
|    | <code>\cwnearcarrow,</code><br><code>\downrightcurvedarrow</code>   |    | <code>\Rightarrow \Rrightarrow</code> |
|    | <code>\acwunderarcarrow</code>  |    | <code>\Uparrow</code>                 |
|    | <code>\acwrightarcarrow</code>  |    | <code>\Lleftarrow</code>              |
|    | <code>\acwoverarcarrow,</code><br><code>\curvearrowleft</code>  |    | <code>\Lleftarrow</code>              |
|    | <code>\acwleftarcarrow</code>   |    | <code>\Longrightarrow</code>          |
|    | <code>\acwsearcarrow,</code><br><code>\uprightcurvearrow</code>   |    | <code>\Longleftarrow</code>           |
|    | <code>\acwnearcarrow,</code><br><code>\leftupcurvedarrow</code>   |    | <code>\Longrightarrow</code>          |
|    | <code>\acwnwarcarrow,</code><br><code>\downleftcurvedarrow</code>   |    | <code>\Longleftarrow</code>           |
|    | <code>\acswarcarrow,</code><br><code>\rightdowncurvedarrow</code>   |    | <code>\Longrightarrow</code>          |
|    | <code>\bdoverarcarrow</code>  |    | <code>\Longleftarrow</code>           |
|    | <code>\bdleftarcarrow</code>  |    | <code>\Longrightarrow</code>          |
|    | <code>\bdunderarcarrow</code>   |    | <code>\Longleftarrow</code>           |
|   | <code>\bdrightarcarrow</code>   |    | <code>\Longrightarrow</code>          |
|  | <code>\bdnwarcarrow</code>  |    | <code>\Longleftarrow</code>           |
|  | <code>\bdswarcarrow</code>  |    | <code>\Longrightarrow</code>          |
|  | <code>\bdsearcarrow</code>  |    | <code>\Longleftarrow</code>           |
|  | <code>\bdnearcarrow</code>  |   | <code>\Longrightarrow</code>          |
|  | <code>\leftfootline</code>  |  | <code>\Longleftarrow</code>           |
|  | <code>\rightfootline</code>   |  | <code>\Longrightarrow</code>          |
|  | <code>\acwcirculararrowup</code>  |  | <code>\Longleftarrow</code>           |
|  | <code>\acwcirculararrowleft,</code><br><code>\circlearrowleft,</code><br><code>\acwopencirculararrow</code> |  | <code>\Longrightarrow</code>          |
|  | <code>\acwcirculararrowdown,</code><br><code>\acwgapcirculararrow</code>                                    |  | <code>\Longleftarrow</code>           |
|  | <code>\acwcirculararrowright</code>   |  | <code>\Longrightarrow</code>          |
|  | <code>\cwcirculararrowdown,</code><br><code>\cwgapcirculararrow</code>                                      |  | <code>\Longleftarrow</code>           |
|  | <code>\cwcirculararrowright,</code><br><code>\circlearrowright,</code><br><code>\cwopencirculararrow</code> |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |
|   |   |  | <code>\Longleftarrow</code>           |
|   |   |  | <code>\Longrightarrow</code>          |

|                   |   |                           |                                       |
|-------------------|---|---------------------------|---------------------------------------|
| $\Uparrow$        | <code>\upvDash, \Vbar</code>            | $\nmid$                   | <code>\nfallingdotseq</code>          |
| $\Rightarrow$     | <code>\leftvDash, \Dashv</code>         | $\nmid$                   | <code>\nrisingdotseq</code>           |
| $\Downarrow$      | <code>\downvDash, \barV</code>          | $\smile$                  | <code>\nsmile</code>                  |
| $\models$         | <code>\rightmodels, \models</code>      | $\frown$                  | <code>\nfrown</code>                  |
| $\Uparrow$        | <code>\upmodels</code>                  | $\smile \frown$           | <code>\nsmilefrown, \nasymp</code>    |
| $\Rightarrow$     | <code>\leftmodels</code>                | $\frown \smile$           | <code>\nfrownsmile, \nclosure</code>  |
| $\Downarrow$      | <code>\downmodels</code>                | $\smile \approx$          | <code>\nsmileeq</code>                |
| $\Vdash$          | <code>\rightVdash, \Vdash</code>        | $\frown \approx$          | <code>\nfrowneq, \narceq</code>       |
| $\vdash$          | <code>\upVdash</code>                   | $\approx \circ$           | <code>\neqcirc</code>                 |
| $\dashv$          | <code>\leftVdash, \dashV</code>         | $\approx \circ$           | <code>\ncirceq</code>                 |
| $\top$            | <code>\downVdash</code>                 | $\approx \wedge$          | <code>\nwedgeeq, \nhateq</code>       |
| $\Vdash$          | <code>\rightAssert, \Assert</code>      | $\approx \vee$            | <code>\nveeeq</code>                  |
| $\vdash$          | <code>\upAssert, \vBar</code>           | $\approx$                 | <code>\nstareq</code>                 |
| $\dashv$          | <code>\leftAssert</code>                | $\approx$                 | <code>\ntriangleeq</code>             |
| $\top$            | <code>\downAssert, \Barv</code>         | $\notin$                  | <code>\nin, \notin</code>             |
| $\Vdash$          | <code>\rightVDash, \VDash</code>        | $\owns$                   | <code>\owns, \nni</code>              |
| $\Uparrow$        | <code>\upVDash</code>                   | $\less$                   | <code>\nless</code>                   |
| $\Rightarrow$     | <code>\leftVDash, \DashV</code>         | $\gtr$                    | <code>\ngtr</code>                    |
| $\top$            | <code>\downVDash</code>                 | $\leq$                    | <code>\nleq</code>                    |
| $\Vdash$          | <code>\Vvdash</code>                    | $\geq$                    | <code>\ngeq</code>                    |
| $\dashv$          | <code>\dashVv</code>                    | $\leq \slant$             | <code>\nleqslant</code>               |
| $\Vdash$          | <code>\vDdash</code>                    | $\geq \slant$             | <code>\ngeqslant</code>               |
| $\equiv$          | <code>\Ddashv</code>                    | $\leq \approx$            | <code>\nleqq</code>                   |
| $\neq$            | <code>\nequal, \neq, \ne</code>         | $\geq \approx$            | <code>\ngeqq</code>                   |
| $\nequiv$         | <code>\nequiv</code>                    | $\less \sim$              | <code>\nlesssim</code>                |
| $\sim$            | <code>\nsim</code>                      | $\gtr \sim$               | <code>\ngtrsim</code>                 |
| $\backsim$        | <code>\nbacksim</code>                  | $\less \approx$           | <code>\nlessapprox</code>             |
| $\approx$         | <code>\napprox</code>                   | $\gtr \approx$            | <code>\ngtrapprox</code>              |
| $\triplesim$      | <code>\ntriplesim, \napproxident</code> | $\less \gtr$              | <code>\nlessgtr</code>                |
| $\simeq$          | <code>\nsimeq, \sime</code>             | $\gtr \less$              | <code>\ngtrless</code>                |
| $\backsim \simeq$ | <code>\nbacksimeq</code>                | $\less \gtr$              | <code>\nlesseqgtr</code>              |
| $\eqsim$          | <code>\neqsim</code>                    | $\gtr \less$              | <code>\ngtreqlless</code>             |
| $\cong$           | <code>\ncong</code>                     | $\less \gtr \gtr$         | <code>\nlesseqqgtr</code>             |
| $\backcong$       | <code>\nbackcong</code>                 | $\gtr \less \gtr$         | <code>\ngtreqqless</code>             |
| $\approx \approx$ | <code>\napproxeq</code>                 | $\less \gtr \slant \gtr$  | <code>\nlesseqslantgtr, \nlesg</code> |
| $\bumpeq$         | <code>\nbumpeq</code>                   | $\gtr \less \slant \less$ | <code>\ngtreqslantless, \ngesl</code> |
| $\bumpeq \approx$ | <code>\nbumpeq \approx</code>           | $\ll$                     | <code>\nll</code>                     |
| $\Bumpeq$         | <code>\nBumpeq</code>                   | $\gg$                     | <code>\ngg</code>                     |
| $\doteq$          | <code>\ndoteq</code>                    | $\lll$                    | <code>\nlll</code>                    |
| $\eqdot$          | <code>\neqdot</code>                    | $\ggg$                    | <code>\nggg</code>                    |
| $\Doteq$          | <code>\nDoteq</code>                    |                           |                                       |

|                      |                               |
|----------------------|-------------------------------|
| $\nlessclosed,$      | $\ngtrdot$                    |
| $\ntriangleleft$     | $\nleqdot$                    |
| $\ngtrclosed,$       | $\ngeqdot$                    |
| $\ntriangleright$    | $\nleqslantdot, \nlesdot$     |
| $\nleqclosed,$       | $\ngeqslantdot, \ngesdot$     |
| $\ntrianglelefteq$   | $\neqslantless$               |
| $\ngeqclosed,$       | $\neqslantgtr$                |
| $\ntrianglerighteq$  | $\ncurlyeqprec$               |
| $\nlesscc, \nltcc$   | $\ncurlyeqsucc$               |
| $\ngtrcc, \ngtcc$    | $\simneqq$                    |
| $\nleqslcc, \nlescc$ | $\backsimneqq$                |
| $\ngeqslcc, \ngescc$ | $\lneq$                       |
| $\nsubset$           | $\gneq$                       |
| $\nsqsubset$         | $\lneqq, \lvertneqq$          |
| $\nsqsupset$         | $\gneqq, \gvertneqq$          |
| $\nsqsubsequal$      | $\lnsim$                      |
| $\nsqsupsequal$      | $\gnsim$                      |
| $\nSsubset$          | $\lnapprox$                   |
| $\nSsupset$          | $\gnapprox$                   |
| $\nsubset$           | $\sqsubsetneq$                |
| $\nsupset$           | $\sqsupsetneq$                |
| $\nsubsequal$        | $\sqsubsetneqq$               |
| $\nsupsequal$        | $\sqsupsetneqq$               |
| $\nsubsequal$        | $\subsetneq, \varsubsetneq$   |
| $\nsupsequal$        | $\supsetneq, \varsupsetneq$   |
| $\nsubset$           | $\subsetneqq, \varsubsetneqq$ |
| $\nSupset$           | $\supsetneqq, \varsupsetneqq$ |
| $\nprec$             | $\precneq$                    |
| $\nsucc$             | $\succneq$                    |
| $\npreceq$           | $\precneqq$                   |
| $\nsucceq$           | $\succneqq$                   |
| $\npreccurlyeq$      | $\precnsim$                   |
| $\nsucccurlyeq$      | $\succnsim$                   |
| $\npreceqq$          | $\precnapprox$                |
| $\nsucceqq$          | $\succnapprox$                |
| $\nprecsim$          | $\rightarrow, \rightarrowto$  |
| $\nsuccsim$          | $\nrightarrow$                |
| $\nprecapprox$       | $\leftarrow, \leftarrowto$    |
| $\nsuccapprox$       | $\downarrow$                  |
| $\nlessdot$          | $\nearrow$                    |
|                      | $\nwarrow$                    |

|                   |                                       |                       |  |
|-------------------|---------------------------------------|-----------------------|--|
| $\nwarrow$        | <code>\nswarrow</code>                | $\Downarrow$          | <code>\nDownmapsto, \nMapsdown</code>        |
| $\nearrow$        | <code>\nsearrow</code>                | $\hookrightarrow$     | <code>\nhookrightarrow</code>                |
| $\Rightarrow$     | <code>\nRightarrow</code>             | $\Uparrow$            | <code>\nhookuparrow</code>                   |
| $\Uparrow$        | <code>\nUparrow</code>                | $\nvarhookleftarrow$  | <code>\nvarhookleftarrow</code>              |
| $\Leftarrow$      | <code>\nLeftarrow</code>              | $\nvarhookdownarrow$  | <code>\nvarhookdownarrow</code>              |
| $\Downarrow$      | <code>\nDownarrow</code>              | $\nvarhooknearrow$    | <code>\nvarhooknearrow</code>                |
| $\nearrow$        | <code>\nNearrow</code>                | $\hookrightarrow$     | <code>\nhooknearrow, \nhknwarrow</code>      |
| $\nwarrow$        | <code>\nNwarrow</code>                | $\nvarhookswarrow$    | <code>\nvarhookswarrow</code>                |
| $\swarrow$        | <code>\nSwarrow</code>                | $\hookrightarrow$     | <code>\nhooksearrow, \nhksearrow</code>      |
| $\searrow$        | <code>\nSearrow</code>                | $\nvarhookrightarrow$ | <code>\nvarhookrightarrow</code>             |
| $\Leftrightarrow$ | <code>\nleftrightharpoonup</code>     | $\nvarhookuparrow$    | <code>\nvarhookuparrow</code>                |
| $\Downarrow$      | <code>\nupdownarrow</code>            | $\nhookleftarrow$     | <code>\nhookleftarrow</code>                 |
| $\nearrow$        | <code>\nneswarrow</code>              | $\nhookdownarrow$     | <code>\nhookdownarrow</code>                 |
| $\nwarrow$        | <code>\nnwsearrow</code>              | $\nearrow$            | <code>\nhooknearrow, \nhknearrow</code>      |
| $\Leftrightarrow$ | <code>\nLeftrightharpoonup</code>     | $\nwarrow$            | <code>\nvarhooknwarrow</code>                |
| $\Downarrow$      | <code>\nUpdownarrow</code>            | $\nwarrow$            | <code>\nhookswarrow, \nhkswarrow</code>      |
| $\nearrow$        | <code>\nNeswarrow</code>              | $\nwarrow$            | <code>\nvarhooksearrow</code>                |
| $\nwarrow$        | <code>\nNwsearrow</code>              | $\rightarrow$         | <code>\nrightharpoonup</code>                |
| $\Rightarrow$     | <code>\ntwoheadrightarrow</code>      | $\upharpoonleft$      | <code>\nupharpoonleft</code>                 |
| $\Uparrow$        | <code>\ntwoheaduparrow</code>         | $\leftarrow$          | <code>\nleftharpoondown</code>               |
| $\Leftarrow$      | <code>\ntwoheadleftarrow</code>       | $\downharpoonright$   | <code>\ndownharpoonright</code>              |
| $\Downarrow$      | <code>\ntwoheaddownarrow</code>       | $\nearrow$            | <code>\nneharpoonnw</code>                   |
| $\nearrow$        | <code>\ntwoheadnearrow</code>         | $\nwarrow$            | <code>\nnwharpoonsw</code>                   |
| $\nwarrow$        | <code>\ntwoheadnwarrow</code>         | $\nearrow$            | <code>\nswharpoonse</code>                   |
| $\swarrow$        | <code>\ntwoheadswarrow</code>         | $\nwarrow$            | <code>\nseharpoonse</code>                   |
| $\searrow$        | <code>\ntwoheadsearrow</code>         | $\rightarrow$         | <code>\nrightharpoondown</code>              |
| $\Rightarrow$     | <code>\nrightarrowtail</code>         | $\upharpoonright$     | <code>\nupharpoonright, \nrestriction</code> |
| $\Uparrow$        | <code>\nuparrowtail</code>            | $\leftarrow$          | <code>\nleftharpoonup</code>                 |
| $\Leftarrow$      | <code>\nleftarrowtail</code>          | $\downharpoonleft$    | <code>\ndownharpoonleft</code>               |
| $\Downarrow$      | <code>\ndownarrowtail</code>          | $\nearrow$            | <code>\nneharpoonse</code>                   |
| $\nearrow$        | <code>\nnearrowtail</code>            | $\nwarrow$            | <code>\nnwharpoonse</code>                   |
| $\nwarrow$        | <code>\nnwarrowtail</code>            | $\nwarrow$            | <code>\nswharpoonnw</code>                   |
| $\swarrow$        | <code>\nswarrowtail</code>            | $\nwarrow$            | <code>\nseharpoonsw</code>                   |
| $\searrow$        | <code>\nsearrowtail</code>            | $\rightarrow$         | <code>\nleftrightharpoonupdown</code>        |
| $\Rightarrow$     | <code>\nrightmapsto, \nmapsto</code>  | $\nupdownharpoonleft$ | <code>\nupdownharpoonleft</code>             |
| $\Uparrow$        | <code>\nupmapsto, \nmapsup</code>     | $\nearrow$            | <code>\nneswharpoonnwse</code>               |
| $\Leftarrow$      | <code>\nleftmapsto, \nmapsfrom</code> | $\nwarrow$            | <code>\nnwseharpoonnesw</code>               |
| $\Downarrow$      | <code>\ndownmapsto, \nmapsdown</code> | $\Rightarrow$         | <code>\nleftrightharpoondownup</code>        |
| $\Rightarrow$     | <code>\nRightmapsto, \nMapsto</code>  | $\upharpoonright$     | <code>\nupdownharpoonrightleft</code>        |
| $\Uparrow$        | <code>\nUpmapsto, \nMapsup</code>     | $\nwarrow$            | <code>\nneswharpoonsenw</code>               |
| $\Leftarrow$      | <code>\nLeftmapsto, \nMapsfrom</code> |                       |  |

|                |  |                   |  |
|----------------|--|-------------------|--|
| $\nwarrow$     | <code>\nnwseharpoonswne</code>   | $\leftrightarrow$ | <code>\nleftleftarrows</code>  |
| $\nearrow$     | <code>\nrightrightarpoons</code>   | $\Downarrow$      | <code>\ndowndownarrows</code>  |
| $\Updownarrow$ | <code>\nupdownharpoons, \nupdown-</code><br><code>harpoonsleftright</code>                 | $\nearrow$        | <code>\nnenearrows</code>  |
| $\nwarrow$     | <code>\nneswharpoons</code>  | $\nwarrow$        | <code>\nnwnwarrows</code>  |
| $\nwarrow$     | <code>\nsenwharpoons</code>  | $\nwarrow$        | <code>\nswswarrows</code>  |
| $\nwarrow$     | <code>\nlefttrightharpoons</code>  | $\nwarrow$        | <code>\nsesearrows</code>  |
| $\Downarrow$   | <code>\ndownupharpoons,</code><br><code>\ndownupharpoonsleft-</code><br><code>right</code> | $\leftrightarrow$ | <code>\nrightrightarrows</code>  |
| $\nwarrow$     | <code>\nswneharpoons</code>  | $\nwarrow$        | <code>\nupdownarrows</code>  |
| $\nwarrow$     | <code>\nnwseharpoons</code>  | $\nwarrow$        | <code>\nneswarrows</code>  |
| $\rightarrow$  | <code>\nrightrightarrow, \ndasharrow,</code><br><code>\ndashrightarrow</code>              | $\nwarrow$        | <code>\nnwsearrows</code>  |
| $\Uparrow$     | <code>\nupbkarrow</code>   | $\leftrightarrow$ | <code>\nlefttrightrightarrows</code>   |
| $\Leftarrow$   | <code>\nleftbkarrow,</code><br><code>\ndashleftarrow</code>                                | $\Uparrow$        | <code>\ndownuparrows</code>  |
| $\Downarrow$   | <code>\ndownbkarrow</code>   | $\nwarrow$        | <code>\nswnearrows</code>  |
| $\nearrow$     | <code>\nnebkarrow</code>   | $\nwarrow$        | <code>\nsenwarrows</code>  |
| $\nwarrow$     | <code>\nnwbkarrow</code>   | $\rightarrow$     | <code>\nrighthwarrow, \nleadsto,</code><br><code>\nrightrightarrow,</code><br><code>\nrightrightcurvedarrow</code> |
| $\nwarrow$     | <code>\nswbkarrow</code>   | $\Uparrow$        | <code>\nvarupwavearrow</code>  |
| $\nwarrow$     | <code>\nsebkarrow</code>   | $\Leftarrow$      | <code>\nvarleftwavearrow</code>  |
| $\rightarrow$  | <code>\nrightrightarrow, \nmultimap</code>   | $\Downarrow$      | <code>\ndownwavearrow</code>   |
| $\Uparrow$     | <code>\nupspoon, \ncirmid</code>   | $\rightarrow$     | <code>\nvarrightwavearrow</code>   |
| $\rightarrow$  | <code>\nleftspoon, \nmultimapinv</code>  | $\Uparrow$        | <code>\nupwavearrow</code>   |
| $\Downarrow$   | <code>\ndownspoon, \nmidcir</code>   | $\Leftarrow$      | <code>\nleftwavearrow,</code><br><code>\nleftsquigarrow,</code><br><code>\nleftcurvedarrow</code>                  |
| $\rightarrow$  | <code>\nrightrightblackspoon</code>  | $\Downarrow$      | <code>\nvardownwavearrow</code>  |
| $\Uparrow$     | <code>\nupblackspoon</code>  | $\leftrightarrow$ | <code>\nlefttrightrightwavearrow,</code><br><code>\nlefttrightrightsquigarrow</code>                               |
| $\rightarrow$  | <code>\nleftblackspoon</code>  | $\Uparrow$        | <code>\nupdownwavearrow</code>   |
| $\Downarrow$   | <code>\ndownblackspoon</code>  | $\leftrightarrow$ | <code>\nvarlefttrightrightwavearrow</code>   |
| $\rightarrow$  | <code>\nlefttrightrightspoon, \ndualmap</code>   | $\Uparrow$        | <code>\nvarupdownwavearrow</code>  |
| $\rightarrow$  | <code>\nlefttrightrightblackspoon</code>   | $\rightarrow$     | <code>\ncwoverarcarrow,</code><br><code>\ncurvearrowright</code>   |
| $\rightarrow$  | <code>\nblackwhitespoon,</code><br><code>\nimageof</code>                                  | $\rightarrow$     | <code>\ncwleftarcarrow</code>  |
| $\rightarrow$  | <code>\nwhiteblackspoon, \norigof</code>   | $\rightarrow$     | <code>\ncwunderarcarrow</code>   |
| $\rightarrow$  | <code>\nrightrightpitchfork</code>   | $\rightarrow$     | <code>\ncwrightarcarrow</code>   |
| $\rightarrow$  | <code>\nuppitchfork, \npitchfork</code>  | $\rightarrow$     | <code>\ncwnwarcarrow,</code><br><code>\nrightrightcurvedarrow</code>   |
| $\rightarrow$  | <code>\nleftpitchfork</code>   | $\rightarrow$     | <code>\ncwswarcarrow,</code><br><code>\nupleftcurvedarrow</code>   |
| $\rightarrow$  | <code>\ndownpitchfork</code>   |                   |  |
| $\rightarrow$  | <code>\nrightrightarrows</code>  |                   |  |
| $\rightarrow$  | <code>\nupuparrows</code>  |                   |  |

|   |                                      |   |                                       |
|---|--------------------------------------|---|---------------------------------------|
|    | <code>\ncwseararrow,</code>          |    | <code>\nRrightarrow</code>            |
|   | <code>\nleftdowncurvedarrow</code>   |    | <code>\nUparrow</code>                |
|    | <code>\ncwneararrow,</code>          |    | <code>\nLleftarrow</code>             |
|   | <code>\ndownrightcurvedarrow</code>  |    | <code>\nDdownarrow</code>             |
|    | <code>\nacwunderararrow</code>       |    | <code>\nlongrightarrow</code>         |
|    | <code>\nacwrightararrow</code>       |    | <code>\nlongleftarrow</code>          |
|    | <code>\nacwoverararrow,</code>       |    | <code>\nLongrightarrow</code>         |
|   | <code>\ncurvearrowleft</code>        |    | <code>\nLongleftarrow</code>          |
|    | <code>\nacwleftararrow</code>        |    | <code>\nlongleftrightarrow</code>     |
|    | <code>\nacwseararrow,</code>         |    | <code>\nLongleftrightarrow</code>     |
|   | <code>\nuprightcurvearrow</code>     |    | <code>\nlongmapsto</code>             |
|    | <code>\nacwneararrow,</code>         |    | <code>\nlongmapsfrom</code>           |
|   | <code>\nleftupcurvedarrow</code>     |    | <code>\nLongmapsto</code>             |
|    | <code>\nacwnwararrow,</code>         |    | <code>\nLongmapsfrom</code>           |
|   | <code>\ndownleftcurvedarrow</code>   |    | <code>\nlongrightwvearrow,</code>     |
|    | <code>\nacwswararrow,</code>         |   | <code>\nlongleadsto,</code>           |
|   | <code>\nrightdowncurvedarrow</code>  |   | <code>\nlongrightsquigarrow</code>    |
|    | <code>\nbdoverararrow</code>         |    | <code>\nlongleftwvearrow,</code>      |
|   | <code>\nbdleftararrow</code>         |   | <code>\nlongleftsquigarrow</code>     |
|  | <code>\nbdunderararrow</code>        |  | <code>\nlongleftfootline,</code>      |
|  | <code>\nbdrightararrow</code>        |   | <code>\nlongdash</code>               |
|  | <code>\nbdnwararrow</code>           |  | <code>\nlongrightfootline,</code>     |
|  | <code>\nbdswararrow</code>           |   | <code>\nlongdashv</code>              |
|  | <code>\nbdseararrow</code>           |  | <code>\nrightvdash,\nvdash</code>     |
|  | <code>\nbdneararrow</code>           |  | <code>\nupvdash,\nperp</code>         |
|  | <code>\nleftfootline</code>          |  | <code>\nleftvdash,\ndashv</code>      |
|  | <code>\nrightfootline</code>         |  | <code>\ndownvdash</code>              |
|  | <code>\nacwcirculararrowup</code>    |  | <code>\nrightassert,\nassert,</code>  |
|  | <code>\nacwcirculararrowleft,</code> |   | <code>\nshortrighttack</code>         |
|   | <code>\ncirculararrowleft,</code>    |  | <code>\nupassert,\nshortuptack</code> |
|   | <code>\nacwopencirculararrow</code>  |  | <code>\nleftassert,</code>            |
|  | <code>\nacwcirculararrowdown,</code> |   | <code>\nshortlefttack</code>          |
|   | <code>\nacwgapcirculararrow</code>   |  | <code>\ndownassert,</code>            |
|  | <code>\nacwcirculararrowright</code> |   | <code>\nshortdowntack</code>          |
|  | <code>\ncwcirculararrowdown,</code>  |  | <code>\nrightvDash,\nvDash</code>     |
|   | <code>\ncwgapcirculararrow</code>    |  | <code>\nupvDash,\nVbar</code>         |
|  | <code>\ncwcirculararrowright,</code> |  | <code>\nleftvDash,\nDashv</code>      |
|   | <code>\ncirculararrowright,</code>   |  | <code>\ndownvDash,\nbarV</code>       |
|   | <code>\ncwopencirculararrow</code>   |  | <code>\nrightmodels,\nmodels</code>   |
|  | <code>\ncwcirculararrowup</code>     |  | <code>\nupmodels</code>               |
|  | <code>\ncwcirculararrowleft</code>   |  | <code>\nleftmodels</code>             |



|                |                                      |              |                                     |
|----------------|--------------------------------------|--------------|-------------------------------------|
| $\Downarrow$   | <code>\downmodels</code>             | $:$          | <code>\Colon</code>                 |
| $\Vdash$       | <code>\nrightVdash, \nVdash</code>   | $-$          | <code>\relbar</code>                |
| $\pm$          | <code>\nupVdash</code>               | $\dot{-}$    | <code>\dotsminusdots</code>         |
| $\dashv$       | <code>\nleftVdash, \ndashV</code>    | $\Join$      | <code>\rJoin</code>                 |
| $\bar{\vdash}$ | <code>\ndownVdash</code>             | $\lJoin$     | <code>\lJoin</code>                 |
| $\Vdash$       | <code>\nrightAssert, \nAssert</code> | $\bowtie$    | <code>\bowtie, \Join</code>         |
| $\pm$          | <code>\nupAssert, \nvBar</code>      | $\propto$    | <code>\propto, \varpropto</code>    |
| $\dashv$       | <code>\nleftAssert</code>            | $\propto$    | <code>\backpropto, \propfrom</code> |
| $\bar{\vdash}$ | <code>\ndownAssert, \nBarv</code>    | $\times$     | <code>\crossing</code>              |
| $\Vdash$       | <code>\nrightVDash, \nVDash</code>   | $\between$   | <code>\between</code>               |
| $\pm$          | <code>\nupVDash</code>               | $\shortmid$  | <code>\shortmid</code>              |
| $\dashv$       | <code>\nleftVDash, \nDashV</code>    | $\mid$       | <code>\mid, \divides</code>         |
| $\bar{\vdash}$ | <code>\ndownVDash</code>             | $\nshortmid$ | <code>\nshortmid</code>             |
| $\Vdash$       | <code>\nVvdash</code>                | $\nmid$      | <code>\nmid, \ndivides</code>       |
| $\dashv$       | <code>\ndashVv</code>                | $\parallel$  | <code>\shortparallel</code>         |
| $\dashv$       | <code>\nvDdash</code>                | $\parallel$  | <code>\parallel</code>              |
| $\dashv$       | <code>\nDdashv</code>                | $\nparallel$ | <code>\nshortparallel</code>        |
| $:$            | <code>:\, \mathratio</code>          | $\parallel$  | <code>\nparallel</code>             |

## 5.4 Punctuation symbols

·     \cdotp                                 :     \colon,\mathcolon

## 5.5 Large operators

|                       |                        |                        |                      |                           |                             |   |   |                             |                           |                      |                      |                             |                             |                       |                       |                        |                        |                               |                               |                         |                         |                        |                         |                       |
|-----------------------|------------------------|------------------------|----------------------|---------------------------|-----------------------------|---|---|-----------------------------|---------------------------|----------------------|----------------------|-----------------------------|-----------------------------|-----------------------|-----------------------|------------------------|------------------------|-------------------------------|-------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-----------------------|
| $\bigplus$            | $\bigtimes$            | $\bigwedge$            | $\bigvee$            | $\bigwedgedot$            | $\bigvee\!\cdot$            | $\bigdoublewedge$   | $\bigdoublevee$   | $\bigcurlywedge$            | $\bigcurlyvee$            | $\bigcap$            | $\bigcup$            | $\bigcap\!\cdot$            | $\bigcup\!\cdot$            | $\bigcap+$            | $\bigcup+$            | $\bigsqcap$            | $\bigsqcup$            | $\bigsqcap\!\cdot$            | $\bigsqcup\!\cdot$            | $\bigsqcap+$            | $\bigsqcup+$            | $\bigoplus$            | $\bigotimes$            | $\bigodot$            |
| <code>\bigplus</code> | <code>\bigtimes</code> | <code>\bigwedge</code> | <code>\bigvee</code> | <code>\bigwedgedot</code> | <code>\bigvee\!\cdot</code> | <code>\bigdoublewedge</code> ,<br><code>\conjquant</code> | <code>\bigdoublevee</code> ,<br><code>\disjquant</code> | <code>\bigcurlywedge</code> | <code>\bigcurlyvee</code> | <code>\bigcap</code> | <code>\bigcup</code> | <code>\bigcap\!\cdot</code> | <code>\bigcup\!\cdot</code> | <code>\bigcap+</code> | <code>\bigcup+</code> | <code>\bigsqcap</code> | <code>\bigsqcup</code> | <code>\bigsqcap\!\cdot</code> | <code>\bigsqcup\!\cdot</code> | <code>\bigsqcap+</code> | <code>\bigsqcup+</code> | <code>\bigoplus</code> | <code>\bigotimes</code> | <code>\bigodot</code> |

|                   |                   |  |                |                |   |
|-------------------|-------------------|--|----------------|----------------|---|
| $\bigotimes$      | $\bigotimes$      | <code>\bigotast</code>   | $f$            | $f$            | <code>\fint</code>  |
| $\prod$           | $\prod$           | <code>\prod</code>   | $\oint$        | $\oint$        | <code>\oint</code>  |
| $\coprod$         | $\coprod$         | <code>\coprod</code>   | $\oiint$       | $\oiint$       | <code>\oiint</code>   |
| $\sum$            | $\sum$            | <code>\sum</code>  | $\oiint$       | $\oiint$       | <code>\oiint</code>   |
| $\sum$            | $\sum$            | <code>\osum, \modtwosum</code>                                       | $\oiint$       | $\oiint$       | <code>\oiint</code>   |
| $\int$            | $\int$            | <code>\int</code>  | $\oint$        | $\oint$        | <code>\rcircclerightint,</code><br><code>\ointctr clockwise</code>  |
| $\iint$           | $\iint$           | <code>\iint</code>   | $\oint$        | $\oint$        | <code>\lcircclerightint,</code><br><code>\varoint clockwise</code>  |
| $\iiint$          | $\iiint$          | <code>\iiint</code>  | $\oint$        | $\oint$        | <code>\rcircleleftint,</code><br><code>\varointctr clockwise</code> |
| $\iiint$          | $\iiint$          | <code>\iiint</code>  | $\oint$        | $\oint$        | <code>\lcircleleftint,</code><br><code>\oint clockwise</code>       |
| $\int \dots \int$ | $\int \dots \int$ | <code>\idotsint, \dotsint</code>                                     | $\sumint$      | $\sumint$      | <code>\sumint</code>  |
| $\int$            | $\int$            | <code>\landupint,</code><br><code>\int clockwise</code>              | $\prod$        | $\prod$        | <code>\smallprod</code>   |
| $\int$            | $\int$            | <code>\landdownint, \awint,</code><br><code>\intctr clockwise</code> | $\coprod$      | $\coprod$      | <code>\smallcoprod</code>   |
| $\int$            | $\int$            | <code>\intbar</code>   | $\int$         | $\int$         | <code>\smallint</code>  |
| $\int$            | $\int$            | <code>\intBar</code>   | $\sqrt{\quad}$ | $\sqrt{\quad}$ | <code>\surd</code>  |

## 5.6 Delimiters and accents

|                   |                         |                 |                        |
|-------------------|-------------------------|-----------------|------------------------|
| $((((($           | <code>(, \lparen</code> | $\lceil \rceil$ | <code>\rceil</code>    |
| $))))$            | <code>), \rparen</code> | $\ulcorner$     | <code>\ulcorner</code> |
| $[[[[$            | <code>[, \lbrack</code> | $\urcorner$     | <code>\urcorner</code> |
| $]]]]$            | <code>], \rbrack</code> | $\llcorner$     | <code>\llcorner</code> |
| $\lfloor \rfloor$ | <code>\lfloor</code>    | $\lrcorner$     | <code>\lrcorner</code> |
| $\rfloor \rfloor$ | <code>\rfloor</code>    | $\ulcorner$     | <code>\ulcorner</code> |
| $\lceil \rceil$   | <code>\lceil</code>     | $\lrcorner$     | <code>\lrcorner</code> |

|                                   |                             |   |                           |
|-----------------------------------|-----------------------------|---|---------------------------|
| $\lll$                            | <code>\lsem, \lBrack</code> | $\rrr$  | <code>\rVert</code>       |
| $\rrr$                            | <code>\rsem, \rBrack</code> | $\lll$  | <code>\Vvert</code>       |
| $\{ \{ \{$                        | <code>\lbrace, \{</code>    | $\lll$  | <code>\lVvert</code>      |
| $\} \} \}$                        | <code>\rbrace, \}</code>    | $\rrr$  | <code>\rVvert</code>      |
| $\langle \langle \langle$         | <code>\langle</code>        | $\uparrow$  | <code>\arrowvert</code>   |
| $\rangle \rangle \rangle$         | <code>\rangle</code>        | $\Uparrow$  | <code>\Arrowvert</code>   |
| $\langle \langle \langle \langle$ | <code>\lAngle</code>        | $\left[ \left[ \left[ \left[$                         | <code>\lgroup</code>      |
| $\rangle \rangle \rangle \rangle$ | <code>\rAngle</code>        | $\right) \right) \right) \right)$                     | <code>\rgroup</code>      |
| $\langle \langle \langle \cdot$   | <code>\langedot</code>      | $\int \int \int \int$                                 | <code>\lmoustache</code>  |
| $\rangle \rangle \rangle \cdot$   | <code>\rangedot</code>      | $\int \int \int \int$                                 | <code>\rmoustache</code>  |
| $///$                             | <code>/, \mathslash</code>  | $\{ \{ \{ \{$   | <code>\bracevert</code>   |
| $\\$                              | <code>\backslash</code>     | $\uparrow \uparrow \uparrow \uparrow$                 | <code>\uparrow</code>     |
| $ $                               | <code> \, \vert</code>      | $\downarrow \downarrow \downarrow \downarrow$         | <code>\downarrow</code>   |
| $\lvert$                          | <code>\lvert</code>         | $\updownarrow \updownarrow \updownarrow \updownarrow$ | <code>\updownarrow</code> |
| $\rvert$                          | <code>\rvert</code>         | $\Uparrow \Uparrow \Uparrow \Uparrow$                 | <code>\Uparrow</code>     |
| $\Vert$                           | <code>\Vert, \lvert</code>  | $\Downarrow \Downarrow \Downarrow \Downarrow$         | <code>\Downarrow</code>   |
| $\lVert$                          | <code>\lVert</code>         | $\Updownarrow \Updownarrow \Updownarrow \Updownarrow$ | <code>\Updownarrow</code> |

|                    |                          |                          |                                |
|--------------------|--------------------------|--------------------------|--------------------------------|
| $\overbrace{xxx}$  | <code>\overbrace</code>  | $\overline{xxx}$         | <code>\overlinesegment</code>  |
| $\underbrace{xxx}$ | <code>\underbrace</code> | $\overleftarrow{xxx}$    | <code>\overleftharpoon</code>  |
| $\overgroup{xxx}$  | <code>\overgroup</code>  | $\overrightarrow{xxx}$   | <code>\overrightharpoon</code> |
| $\undergroup{xxx}$ | <code>\undergroup</code> | $\underline{xxx}$        | <code>\underlinesegment</code> |
| $\sqrt{b}$         | <code>\sqrt</code>       | $\vec{b}$                | <code>\vec</code>              |
| $\widehat{xxx}$    | <code>\widehat</code>    | $\bar{b}$                | <code>\middlebar</code>        |
| $\widetilde{xxx}$  | <code>\widetilde</code>  | $\text{\textbackslash}b$ | <code>\middleslash</code>      |
| $\wideparen{xxx}$  | <code>\wideparen</code>  | $\text{\textbackslash}b$ | <code>\strokethrough</code>    |

## 5.7 Faked symbols

The following symbols are taken from the text font.

|            |                             |                          |                           |
|------------|-----------------------------|--------------------------|---------------------------|
| $\dagger$  | <code>\dagger</code>        | $\hbar$                  | <code>\hbar</code>        |
| $\ddagger$ | <code>\ddagger</code>       | $\hslash$                | <code>\hslash</code>      |
| $\P$       | <code>\mathparagraph</code> | $\text{\textcircled{R}}$ | <code>\circledR</code>    |
| $\S$       | <code>\mathsection</code>   | $\text{\textcircled{S}}$ | <code>\circledS</code>    |
| $\$$       | <code>\mathdollar</code>    | $\lambda$                | <code>\lambdabar</code>   |
| $\pounds$  | <code>\mathsterling</code>  | $\lambda$                | <code>\lambdaslash</code> |
| $\yen$     | <code>\yen</code>           |                          |                           |

## 5.8 Missing symbols

The following symbols from Computer Modern or the AMS fonts are missing in MdSymbol. If available, they should be taken from the text font.

|                        |                           |                        |
|------------------------|---------------------------|------------------------|
| <code>\mho</code>      | <code>\backepsilon</code> | <code>\diagup</code>   |
| <code>\eth</code>      | <code>\mapstochar</code>  | <code>\diagdown</code> |
| <code>\digamma</code>  | <code>\lhook</code>       | <code>\Bbbk</code>     |
| <code>\varkappa</code> | <code>\rhook</code>       |                        |

## 6 Implementation

```

1 {*style}
2 \RequirePackage{xkeyval}
3 \newcommand*\mdsy@choicekey[3]{%
4   \define@choicekey*{MdSymbol.sty}{#1}[\@tempa\@tempb]{#2}{#3}%
5 }

```

We use xkeyval's key mechanism to declare all options. The first options determines the size of delimiters.

```
6 \define@boolkey{MdSymbol.sty}[mdsy@]{largedelims}[true]{}
```

The following option determines whether faked symbols should be defined.

```
7 \define@boolkey{MdSymbol.sty}[mdsy@]{retainmissing}[true]{}
```

The next option allows to scale the fonts by an arbitrary factor.

```
8 \newcommand{\mdsy@scale}{1.0}
```

```
9 \define@key{MdSymbol.sty}{scale}{\renewcommand\mdsy@scale{#1}}
```

The next option controls whether only the sans and sansbold math versions are modified.

```
10 \define@boolkey{MdSymbol.sty}[mdsy@]{onlysansmath}[true]{}
```

The following two options control which weights are used for which math version and font size.

```
11 \newcommand\mdsy@mweight@normal{Regular}
```

```
12 \newcommand\mdsy@mweight@small{Regular}
```

```
13 \newcommand\mdsy@bweight@normal{Semibold}
```

```
14 \newcommand\mdsy@bweight@small{Semibold}
```

```
15 \mdsy@choicekey{normalweight}{light,regular,autolight,autoregular}{%
```

```
16 \ifcase\@tempb\relax
```

```
17 \renewcommand\mdsy@mweight@normal{Light}%
```

```
18 \renewcommand\mdsy@mweight@small{Light}%
```

```
19 \or
```

```
20 \renewcommand\mdsy@mweight@normal{Regular}%
```

```
21 \renewcommand\mdsy@mweight@small{Regular}%
```

```
22 \or
```

```
23 \renewcommand\mdsy@mweight@normal{Light}%
```

```
24 \renewcommand\mdsy@mweight@small{Regular}%
```

```
25 \or
```

```
26 \renewcommand\mdsy@mweight@normal{Regular}%
```

```
27 \renewcommand\mdsy@mweight@small{Semibold}%
```

```
28 \fi
```

```
29 }
```

```
30 \mdsy@choicekey{boldweight}{semibold,bold,autosemibold}{%
```

```
31 \ifcase\@tempb\relax
```

```
32 \renewcommand\mdsy@bweight@normal{Semibold}%
```

```
33 \renewcommand\mdsy@bweight@small{Semibold}%
```

```
34 \or
```

```
35 \renewcommand\mdsy@bweight@normal{Bold}%
```

```
36 \renewcommand\mdsy@bweight@small{Bold}%
```

```
37 \or
```

```
38 \renewcommand\mdsy@bweight@normal{Semibold}%
```

```
39 \renewcommand\mdsy@bweight@small{Bold}%
```

```
40 \fi
```

```
41 }
```

```
42 \ExecuteOptionsX{largedelims=false,onlysansmath=false,retainmissing=false}
```

```
43 \ProcessOptionsX
```

Load external packages, but only if they are not already loaded in order to avoid warning messages about loading a package twice with different options.

```
44 \@ifpackageloaded{amsmath}{\RequirePackage{amsmath}}
45 \@ifpackageloaded{textcomp}{\RequirePackage{textcomp}}
```

Command to check whether tabular math version is available

```
46 \newcommand*{\mdsy@if@tabular@math[1]{%
47   #1%
48 }
```

Add an additional switch into the mathversion command to indicate sans or sansbold math. Putting this into the `\ifmathversionsans` command does not work with the delimiter definition below.

```
49 \ifmdsy@onlysansmath
50   \DeclareMathVersion{sans}
51   \DeclareMathVersion{sansbold}
52   \mdsy@if@tabular@math{%
53     \DeclareMathVersion{sanstabular}%
54     \DeclareMathVersion{sansboldtabular}}
55
56 \newif\if@mdsy@sans@
57
58 \let\mathversion@old\mathversion
59 \def\sans@version{sans}
60 \def\sans@version@bold{sansbold}
61 \def\sans@version@tab{sanstabular}
62 \def\sans@version@bold@tab{sansboldtabular}
63 \renewcommand{\mathversion}[1]{%
64   \mathversion@old{#1}%
65   \@mdsy@sans@false%
66   \ifx\math@version\sans@version%
67     \@mdsy@sans@true%
68   \fi%
69   \ifx\math@version\sans@version@bold%
70     \@mdsy@sans@true%
71   \fi%
72   \ifx\math@version\sans@version@tab%
73     \@mdsy@sans@true%
74   \fi%
75   \ifx\math@version\sans@version@bold@tab%
76     \@mdsy@sans@true%
77   \fi%
78 }
79 \fi
80 \def\ifmathversionsans{%
81   \if@mdsy@sans@
```

```

82   \expandafter\@firstoftwo
83   \else
84   \expandafter\@secondoftwo
85   \fi
86 }

```

The following shorthands simplify the definition of commands which have different output depending on the mathversion in the case of `onlysansmath`. Without that option, they just normally define the commands.

```

87 \RequirePackage{etoolbox}
88
89 \newcommand\mdsy@setslot[1]{\@tempcnta #1\relax}
90 \newcommand\mdsy@nextslot{\advance\@tempcnta 1\relax}
91 \newcommand\mdsy@prevslot{\advance\@tempcnta -1\relax}
92
93 \newcommand\mdsy@@DeclareSymbol[4]{\expandafter\DeclareMathSymbol\expandafter{\csname
94
95 \ifmdsy@onlysansmath
96   \newcommand\mdsy@DeclareSymbol[3]{%
97     \ifcsdef{#1}{%
98       \csletcs{#1@old}{#1}%
99     }\expandafter\mdsy@@DeclareSymbol\expandafter{\the\@tempcnta}{#1}{#3}{#2}%
100     \csletcs{#1@old}{#1}}
101   \expandafter\mdsy@@DeclareSymbol\expandafter{\the\@tempcnta}{sans#1}{#3}{#2}%
102 %   \csletcs{#1@new}{sans#1}
103   \csundef{#1}%
104   \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
105   \mdsy@nextslot
106 }
107 \newcommand\mdsy@DeclareDelimiter[4]{%
108   \ifcsdef{#1}{%
109     \csletcs{#1@old}{#1}%
110   }\expandafter\DeclareMathDelimiter\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{%
111     \csletcs{#1@old}{#1}}%
112   \expandafter\DeclareMathDelimiter\expandafter{\csname sans#1\endcsname}{#2}{#3}{#4}{%
113 %   \csletcs{#1@new}{sans#1}
114   \csundef{#1}%
115   \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
116 }
117 \newcommand\mdsy@DeclareOperator[3]{%
118   \ifcsdef{#1}{%
119     \csletcs{#1@old}{#1}%
120   }\csdef{#1}{\DOTSB#3\slimits@}
121   \csletcs{#1@old}{#1}%
122   \csdef{sans#1}{\DOTSB#3\slimits@}
123 %   \csletcs{#1@new}{sans#1}

```

```

124 \csundef{#1}%
125 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
126 }
127 \newcommand\mdsy@DeclareIntegral[3]{%
128 \ifcsdef{#1}{%
129 \csletcs{#1@old}{#1}%
130 }{\csdef{#1}{\DOTSI#3\ilimits@}
131 \csletcs{#1@old}{#1}}%
132 \csdef{sans#1}{\DOTSI#3\ilimits@}%
133 % \csletcs{#1@new}{sans#1}
134 \csundef{#1}%
135 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
136 }
137 \newcommand\mdsy@DeclareMathSymbol[4]{%
138 \ifcsdef{#1}{%
139 \csletcs{#1@old}{#1}%
140 }{\expandafter\DeclareMathSymbol\expandafter{\csname#1\endcsname}{#2}{#3}{#4}%
141 \csletcs{#1@old}{#1}}%
142 \expandafter\DeclareMathSymbol\expandafter{\csname sans#1\endcsname}{#2}{#3}{#4}%
143 % \csletcs{#1@new}{sans#1}
144 \csundef{#1}%
145 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
146 }
147 \newcommand\mdsy@DeclareMathDelimiter[6]{%
148 \ifcsdef{#1}{%
149 \csletcs{#1@old}{#1}%
150 }{\expandafter\DeclareMathDelimiter\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{#5}{#6}%
151 \csletcs{#1@old}{#1}}%
152 \expandafter\DeclareMathDelimiter\expandafter{\csname sans#1\endcsname}{#2}{#3}{#4}{#5}{#6}%
153 % \csletcs{#1@new}{sans#1}
154 \csundef{#1}%
155 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
156 }
157 \newcommand\mdsy@DeclareMathAccent[4]{%
158 \ifcsdef{#1}{%
159 \csletcs{#1@old}{#1}%
160 }{\expandafter\DeclareMathAccent\expandafter{\csname#1\endcsname}{#2}{#3}{#4}%
161 \csletcs{#1@old}{#1}}%
162 \expandafter\DeclareMathAccent\expandafter{\csname sans#1\endcsname}{#2}{#3}{#4}%
163 % \csletcs{#1@new}{sans#1}
164 \csundef{#1}%
165 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
166 }
167 \newcommand\mdsy@DeclareMathRadical[5]{%
168 \ifcsdef{#1}{%

```



```

169     \csletcs{#1@old}{#1}%
170   }{\expandafter\DeclareMathRadical\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{#5}
171     \csletcs{#1@old}{#1}}%
172   \expandafter\DeclareMathRadical\expandafter{\csname sans#1\endcsname}{#2}{#3}{#4}
173 %   \csletcs{#1@new}{sans#1}
174   \csundef{#1}%
175   \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}%
176 }
177 \newcommand{\mdsy@DeclareActiveMathSymbol}[4]{%
178   \ifnum\mathcode'#1="8000 %
179     \errmessage{'#1' is already active}%
180   \fi
181   \expandafter\mathchardef\csname#1@old\endcsname=\mathcode'#1 %
182   \expandafter\DeclareMathSymbol\csname#1@new\endcsname{#2}{#3}{#4}
183   \begingroup
184   \lccode'\~='#1 %
185   \lowercase{\endgroup
186     \def~%
187     }{\ifmathversionsans{\csname#1@new\endcsname}{\csname#1@old\endcsname}}%
188   \mathcode'#1="8000 %
189 }
190 \newcommand{\mdsy@DeclareActiveMathDelimiter}[4]{%
191   % don't know how to implement an active math delimiter; so de-
192   % clare
193   % it as an active math symbol instead
194   \mdsy@DeclareActiveMathSymbol{#1}{#2}{#3}{#4}
195 }
196 \newcommand{\mdsy@renewcommand}[2]{%
197   \ifcsdef{#1}{%
198     \csletcs{#1@old}{#1}%
199   }{%
200     \expandafter\newcommand\csname #1@old\endcsname{#2}%
201   }%
202   \expandafter\newcommand\csname sans#1\endcsname{#2}%
203   \csundef{#1}%
204   \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}%
205 }
206 \newcommand{\mdsy@DeclareRobustCommandArg}[3]{%
207   \ifcsdef{#1}{%
208     \csletcs{#1@old}{#1}%
209   }{%
210     \expandafter\DeclareRobustCommand\csname#1\endcsname[#2]{#3}%
211   }%
212   \csletcs{#1@old}{#1}%
213   \expandafter\DeclareRobustCommand\csname sans#1\endcsname[#2]{#3}%

```

```

213 \csundef{#1}%
214 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
215 }
216 \newcommand{\mdsy@DeclareRobustCommand}[2]{%
217 \ifcsdef{#1}{%
218 \csletcs{#1@old}{#1}%
219 }{%
220 \expandafter\DeclareRobustCommand\csname#1\endcsname{#2}%
221 \csletcs{#1@old}{#1}%
222 }%
223 \expandafter\DeclareRobustCommand\csname sans#1\endcsname{#2}%
224 \csundef{#1}%
225 \csdef{#1}{\ifmathversionsans{\csname sans#1\endcsname}{\csname#1@old\endcsname}}
226 }
227 \else
228 \let\ifmathversionsans\undefined
229 \newcommand{\mdsy@DeclareSymbol}[3]{%
230 \csundef{#1}%
231 \expandafter\mdsy@@DeclareSymbol\expandafter{\the\@tempcnta}{#1}{#3}{#2}%
232 \mdsy@nextslot
233 }
234 \newcommand{\mdsy@DeclareDelimiter}[4]{%
235 \csundef{#1}%
236 \expandafter\DeclareMathDelimiter\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{#3}
237 }
238 \newcommand{\mdsy@DeclareOperator}[3]{%
239 \csdef{#1}{\DOTSB#3\slimits@}%
240 }
241 \newcommand{\mdsy@DeclareIntegral}[3]{%
242 \csdef{#1}{\DOTSI#3\ilimits@}%
243 }
244 \newcommand{\mdsy@DeclareMathSymbol}[4]{%
245 \expandafter\DeclareMathSymbol\expandafter{\csname#1\endcsname}{#2}{#3}{#4}%
246 }
247 \newcommand{\mdsy@DeclareMathDelimiter}[6]{%
248 \expandafter\DeclareMathDelimiter\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{#5}
249 }
250 \newcommand{\mdsy@DeclareMathAccent}[4]{%
251 \expandafter\DeclareMathAccent\expandafter{\csname#1\endcsname}{#2}{#3}{#4}%
252 }
253 \newcommand{\mdsy@DeclareMathRadical}[5]{%
254 \expandafter\DeclareMathRadical\expandafter{\csname#1\endcsname}{#2}{#3}{#4}{#5}%
255 }
256 \newcommand{\mdsy@DeclareActiveMathSymbol}[4]{%
257 \DeclareMathSymbol{#1}{#2}{#3}{#4}%

```

```

258 }
259 \newcommand\mdsy@DeclareActiveMathDelimiter[4]{%
260   \DeclareMathDelimiter{#1}{#2}{#3}{#4}{#3}{#4}%
261 }
262 \newcommand{\mdsy@renewcommand}[2]{%
263   \expandafter\providecommand\csname #1\endcsname{#2}%
264 }
265 \newcommand{\mdsy@DeclareRobustCommand}[2]{%
266   \expandafter\DeclareRobustCommand\csname#1\endcsname{#2}%
267 }
268 \newcommand{\mdsy@DeclareRobustCommandArg}[3]{%
269   \expandafter\DeclareRobustCommand\csname#1\endcsname[#2]{#3}%
270 }
271 \fi
272
273 \newcommand\mdsy@DeclareAlias[3]{\mdsy@prevslot\mdsy@DeclareSymbol{#1}{#2}{#3}}
274
275 \newcommand\mdsy@DeclareOpen[3]{\mdsy@DeclareDelimiter{#1}{\mathopen}{#2}{#3}}
276 \newcommand\mdsy@DeclareClose[3]{\mdsy@DeclareDelimiter{#1}{\mathclose}{#2}{#3}}

```

If the option `largedelims` has been selected, we readjust the scaling factors of big delimiters, so that `\Big`, `\bigg` and `\Bigg` do not change their size.

```

277 \ifmdsy@largedelims
278   \mdsy@renewcommand{\Big}{\bBigg@{1.25}}
279   \mdsy@renewcommand{\bigg}{\bBigg@{1.66}}
280   \mdsy@renewcommand{\Bigg}{\bBigg@{2.08}}
281 \fi

```

Some symbols missing from `MdSymbol` can be obtained from other fonts or by combining several other symbols.

```

282 \ifmdsy@retainmissing
283 \else
284   \mdsy@DeclareRobustCommand{\dagger}{\mdsy@text{\textdagger}}
285   \mdsy@DeclareRobustCommand{\ddagger}{\mdsy@text{\textdaggerdbl}}
286   \mdsy@DeclareRobustCommand{\mathparagraph}{\mdsy@text{\textparagraph}}
287   \mdsy@DeclareRobustCommand{\mathsection}{\mdsy@text{\textsection}}
288   \mdsy@DeclareRobustCommand{\mathdollar}{\mdsy@text{\textdollar}}
289   \mdsy@DeclareRobustCommand{\mathsterling}{\mdsy@text{\textsterling}}
290   \mdsy@DeclareRobustCommand{\yen}{\mdsy@text{\textyen}}
291   \mdsy@DeclareRobustCommand{\circledR}{\mdsy@text{\textcircled{\%
292     \check@mathfonts\fontsize\sf@size\z@\math@fontsfalse\selectfont R}}}
293   \mdsy@DeclareRobustCommand{\circledS}{\mdsy@text{\textcircled{\%
294     \check@mathfonts\fontsize\sf@size\z@\math@fontsfalse\selectfont S}}}
295   \mdsy@DeclareRobustCommand{\Re}{\mathfrak{R}}
296   \mdsy@DeclareRobustCommand{\Im}{\mathfrak{I}}
297   \mdsy@DeclareRobustCommand{\dotcong}{\mathrel{\dot{\cong}}}

```

```

298 \mdsy@DeclareRobustCommand{thicksim}{\mathrel{\text{\boldmath$\m@th\sim$}}}
299 \mdsy@DeclareRobustCommand{thickapprox}{\mathrel{\text{\boldmath$\m@th\approx$}}}
300 \mdsy@DeclareRobustCommand{hslash}{\middleslash h}
301 \mdsy@DeclareRobustCommand{centerdot}{\mathbin{\rule{0.15em}{0.15em}}}
302 \mdsy@DeclareRobustCommand{lambdabar}{\middlebar\lambda}
303 \mdsy@DeclareRobustCommand{lambdaslash}{\middleslash\lambda}
304 \@ifpackageloaded{MyriadPro}{}{%
305 \mdsy@DeclareRobustCommand{hbar}{\middlebar h}%
306 }
307 \fi

```

Unneeded partial symbols.

```

308 \ifmdsy@onlysansmath
309 \else
310 \let\mapstochar\undefined
311 \let\lhook\undefined
312 \let\rhook\undefined
313 \fi

```

Font definitions.

```

314 \DeclareFontFamily{U}{MdSymbolA}{}
315 \DeclareFontFamily{U}{MdSymbolB}{}
316 \DeclareFontFamily{U}{MdSymbolC}{}
317 \DeclareFontFamily{U}{MdSymbolD}{}
318 \DeclareFontFamily{U}{MdSymbolE}{}
319 \DeclareFontFamily{U}{MdSymbolF}{}
320
321 \RequirePackage{fltpoint}
322 \fpDecimalSign{.}
323 \newcommand*{\mdsy@calc@bsize}[2]{\fpDiv{#1}{#2}{\mdsy@scale}}
324
325 \mdsy@calc@bsize{\mdsy@s@medium}{6}
326 \mdsy@calc@bsize{\mdsy@s@bold}{6}
327
328 \DeclareFontShape{U}{MdSymbolA}{m}{n}{
329 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolA-\mdsy@mweight@small
330 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolA-\mdsy@mweight@normal
331 }{}
332 \DeclareFontShape{U}{MdSymbolA}{b}{n}{
333 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolA-\mdsy@bweight@small
334 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolA-\mdsy@bweight@normal
335 }{}
336 \DeclareFontShape{U}{MdSymbolB}{m}{n}{
337 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolB-\mdsy@mweight@small
338 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolB-\mdsy@mweight@normal
339 }{}
340 \DeclareFontShape{U}{MdSymbolB}{b}{n}{

```

```

341 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolB-\mdsy@bweight@small
342 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolB-\mdsy@bweight@normal
343 }{}
344 \DeclareFontShape{U}{MdSymbolC}{m}{n}{
345 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolC-\mdsy@mweight@small
346 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolC-\mdsy@mweight@normal
347 }{}
348 \DeclareFontShape{U}{MdSymbolC}{b}{n}{
349 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolC-\mdsy@bweight@small
350 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolC-\mdsy@bweight@normal
351 }{}
352 \DeclareFontShape{U}{MdSymbolD}{m}{n}{
353 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolD-\mdsy@mweight@small
354 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolD-\mdsy@mweight@normal
355 }{}
356 \DeclareFontShape{U}{MdSymbolD}{b}{n}{
357 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolD-\mdsy@bweight@small
358 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolD-\mdsy@bweight@normal
359 }{}
360 \DeclareFontShape{U}{MdSymbolE}{m}{n}{
361 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolE-\mdsy@mweight@small
362 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolE-\mdsy@mweight@normal
363 }{}
364 \DeclareFontShape{U}{MdSymbolE}{b}{n}{
365 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolE-\mdsy@bweight@small
366 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolE-\mdsy@bweight@normal
367 }{}
368 \DeclareFontShape{U}{MdSymbolF}{m}{n}{
369 < -\mdsy@s@medium> s * [\mdsy@scale] MdSymbolF-\mdsy@mweight@small
370 <\mdsy@s@medium- > s * [\mdsy@scale] MdSymbolF-\mdsy@mweight@normal
371 }{}
372 \DeclareFontShape{U}{MdSymbolF}{b}{n}{
373 < - \mdsy@s@bold> s * [\mdsy@scale] MdSymbolF-\mdsy@bweight@small
374 <\mdsy@s@bold - > s * [\mdsy@scale] MdSymbolF-\mdsy@bweight@normal
375 }{}
376
377 \newcommand\IfUndefSymbolFont[3]{\@ifundefined{sym#1}{#2}{#3}}
378 \newcommand{\mdsy@DeclareSymbolFont}[3]{%
379 \IfUndefSymbolFont{#1}{%
380 \DeclareSymbolFont{#1}{#2}{#3}{m}{n}
381 }{%
382 \ifmdsy@onlysansmath%
383 \SetSymbolFont{#1}{sans}{#2}{#3}{m}{n}%
384 \mdsy@if@tabular@math{\SetSymbolFont{#1}{sanstabular}{#2}{#3}{m}{n}}%
385 \else%

```

```

386 \SetSymbolFont{#1}{normal}{#2}{#3}{m}{n}%
387 \mdsy@if@tabular@math{\SetSymbolFont{#1}{tabular}{#2}{#3}{m}{n}}%
388 \fi%
389 }
390 \ifmdsy@onlysansmath%
391 \SetSymbolFont{#1}{sansbold}{#2}{#3}{b}{n}%
392 \mdsy@if@tabular@math{\SetSymbolFont{#1}{sansboldtabular}{#2}{#3}{b}{n}}%
393 \else%
394 \SetSymbolFont{#1}{bold}{#2}{#3}{b}{n}%
395 \mdsy@if@tabular@math{\SetSymbolFont{#1}{boldtabular}{#2}{#3}{b}{n}}%
396 \fi%
397 }
398
399 \mdsy@DeclareSymbolFont{symbols}{U}{MdSymbolA}
400 \mdsy@DeclareSymbolFont{relations}{U}{MdSymbolB}
401 \mdsy@DeclareSymbolFont{arrows}{U}{MdSymbolC}
402 \mdsy@DeclareSymbolFont{narrows}{U}{MdSymbolD}
403 \mdsy@DeclareSymbolFont{largesymbols}{U}{MdSymbolE}
404 \mdsy@DeclareSymbolFont{delimiters}{U}{MdSymbolF}
405

```

A command for taking math symbols from the text font.

```

406 \def\mdsy@bold{bold}
407 \newcommand*\mdsy@text[1]{%
408 \ifx\mdsy@bold\math@version
409 \text{\sffamily\bfseries#1}%
410 \else
411 \text{\sffamily\mdseries#1}%
412 \fi
413 }

```

MdSymbolA: binary operators and ordinary symbols

```

414 \mdsy@setslot{0}
415 \mdsy@DeclareSymbol{cdot}{symbols}{\mathbin}
416 \mdsy@DeclareAlias{cdotp}{symbols}{\mathpunct}
417 \mdsy@DeclareSymbol{hdotdot}{symbols}{\mathbin}
418 \mdsy@DeclareSymbol{vdotdot}{symbols}{\mathbin}
419 \mdsy@DeclareAlias{colon}{symbols}{\mathpunct}
420 \mdsy@DeclareAlias{mathcolon}{symbols}{\mathpunct}
421 \mdsy@DeclareAlias{mathratio}{symbols}{\mathrel}
422 \mdsy@DeclareSymbol{udotdot}{symbols}{\mathbin}
423 \mdsy@DeclareSymbol{ddotdot}{symbols}{\mathbin}
424 \mdsy@DeclareSymbol{hdots}{symbols}{\mathord}
425 \mdsy@DeclareAlias{cdots}{symbols}{\mathinner}
426 \mdsy@DeclareAlias{cdots}{symbols}{\mathinner}
427 \mdsy@DeclareSymbol{@vdots}{symbols}{\mathord}
428 \mdsy@DeclareRobustCommand{vdots}{\ifmmode\@vdots\else\hbox{$\@vdots$}\fi}

```

```

429 \mdsy@DeclareSymbol{udots}{symbols}{\mathord}
430 \mdsy@DeclareAlias{adots}{symbols}{\mathord}
431 \mdsy@DeclareSymbol{ddots}{symbols}{\mathord}
432 \mdsy@DeclareSymbol{righttherefore}{symbols}{\mathord}
433 \mdsy@DeclareSymbol{uptherefore}{symbols}{\mathord}
434 \mdsy@DeclareAlias{therefore}{symbols}{\mathord}
435 \mdsy@DeclareSymbol{lefttherefore}{symbols}{\mathord}
436 \mdsy@DeclareSymbol{downtherefore}{symbols}{\mathord}
437 \mdsy@DeclareAlias{because}{symbols}{\mathord}
438 \mdsy@DeclareSymbol{squaredots}{symbols}{\mathord}
439 \mdsy@DeclareAlias{Colon}{symbols}{\mathrel}
440 \mdsy@DeclareSymbol{minus}{symbols}{\mathbin}
441 \mdsy@DeclareSymbol{medslash}{symbols}{\mathbin}
442 \mdsy@DeclareAlias{smalldivslash}{symbols}{\mathbin}
443 \mdsy@DeclareSymbol{medbackslash}{symbols}{\mathbin}
444 \mdsy@DeclareAlias{smallsetminus}{symbols}{\mathbin}
445 \mdsy@DeclareSymbol{plus}{symbols}{\mathbin}
446 \mdsy@DeclareSymbol{times}{symbols}{\mathbin}
447 \mdsy@DeclareSymbol{dotminus}{symbols}{\mathbin}
448 \mdsy@DeclareSymbol{minusdot}{symbols}{\mathbin}
449 \mdsy@DeclareSymbol{div}{symbols}{\mathbin}
450 \mdsy@DeclareSymbol{minusfdots}{symbols}{\mathbin}
451 \mdsy@DeclareSymbol{minusrdots}{symbols}{\mathbin}
452 \mdsy@DeclareSymbol{dotsminusdots}{symbols}{\mathrel}
453 \mdsy@DeclareSymbol{pm}{symbols}{\mathbin}
454 \mdsy@DeclareSymbol{mp}{symbols}{\mathbin}
455 \mdsy@DeclareSymbol{dotplus}{symbols}{\mathbin}
456 \mdsy@DeclareSymbol{plusdot}{symbols}{\mathbin}
457 \mdsy@DeclareSymbol{dottimes}{symbols}{\mathbin}
458 \mdsy@DeclareSymbol{timesbar}{symbols}{\mathbin}
459 \mdsy@DeclareSymbol{divideontimes}{symbols}{\mathbin}
460 \mdsy@DeclareSymbol{neg}{symbols}{\mathord}
461 \mdsy@DeclareAlias{lnot}{symbols}{\mathord}
462 \mdsy@DeclareAlias{minushookdown}{symbols}{\mathbin}
463 \mdsy@DeclareSymbol{backneg}{symbols}{\mathord}
464 \mdsy@DeclareAlias{hookdownminus}{symbols}{\mathbin}
465 \mdsy@DeclareAlias{invneg}{symbols}{\mathord}
466 \mdsy@DeclareAlias{invnot}{symbols}{\mathord}
467 \mdsy@DeclareSymbol{intprod}{symbols}{\mathbin}
468 \mdsy@DeclareAlias{minushookup}{symbols}{\mathbin}
469 \mdsy@DeclareAlias{turnedneg}{symbols}{\mathord}
470 \mdsy@DeclareAlias{turnednot}{symbols}{\mathord}
471 \mdsy@DeclareSymbol{intprodr}{symbols}{\mathbin}
472 \mdsy@DeclareAlias{hookupminus}{symbols}{\mathbin}
473 \mdsy@DeclareAlias{turnedbackneg}{symbols}{\mathord}

```

```

474 \mdsy@DeclareSymbol{leftthreetimes}{symbols}{\mathbin}
475 \mdsy@DeclareSymbol{rightthreetimes}{symbols}{\mathbin}
476 \mdsy@DeclareSymbol{dtimes}{symbols}{\mathbin}
477 \mdsy@DeclareAlias{btimes}{symbols}{\mathbin}
478 \mdsy@DeclareSymbol{rtimes}{symbols}{\mathbin}
479 \mdsy@DeclareAlias{rJoin}{symbols}{\mathrel}
480 \mdsy@DeclareSymbol{utimes}{symbols}{\mathbin}
481 \mdsy@DeclareAlias{ttimes}{symbols}{\mathbin}
482 \mdsy@DeclareSymbol{ltimes}{symbols}{\mathbin}
483 \mdsy@DeclareAlias{lJoin}{symbols}{\mathrel}
484 \mdsy@DeclareSymbol{bowtie}{symbols}{\mathrel}
485 \mdsy@DeclareAlias{Join}{symbols}{\mathrel}
486 \mdsy@DeclareAlias{lrtimes}{symbols}{\mathbin}
487 \mdsy@DeclareSymbol{upbowtie}{symbols}{\mathbin}
488 \mdsy@DeclareAlias{hourglass}{symbols}{\mathbin}
489 \mdsy@DeclareSymbol{rightY}{symbols}{\mathbin}
490 \mdsy@DeclareSymbol{upY}{symbols}{\mathbin}
491 \mdsy@DeclareSymbol{leftY}{symbols}{\mathbin}
492 \mdsy@DeclareSymbol{downY}{symbols}{\mathbin}
493 \mdsy@DeclareSymbol{wedge}{symbols}{\mathbin}
494 \mdsy@DeclareAlias{land}{symbols}{\mathbin}
495 \mdsy@DeclareSymbol{vee}{symbols}{\mathbin}
496 \mdsy@DeclareAlias{lor}{symbols}{\mathbin}
497 \mdsy@DeclareSymbol{wedgedot}{symbols}{\mathbin}
498 \mdsy@DeclareSymbol{veedot}{symbols}{\mathbin}
499 \mdsy@DeclareSymbol{doublewedge}{symbols}{\mathbin}
500 \mdsy@DeclareAlias{wedgeonwedge}{symbols}{\mathbin}
501 \mdsy@DeclareSymbol{doublevee}{symbols}{\mathbin}
502 \mdsy@DeclareAlias{veeonvee}{symbols}{\mathbin}
503 \mdsy@DeclareSymbol{curlywedge}{symbols}{\mathbin}
504 \mdsy@DeclareSymbol{curlyvee}{symbols}{\mathbin}
505 \mdsy@DeclareSymbol{barwedge}{symbols}{\mathbin}
506 \mdsy@DeclareSymbol{veebar}{symbols}{\mathbin}
507 \mdsy@DeclareSymbol{doublebarwedge}{symbols}{\mathbin}
508 \mdsy@DeclareSymbol{veedoublebar}{symbols}{\mathbin}
509 \mdsy@DeclareSymbol{cup}{symbols}{\mathbin}
510 \mdsy@DeclareSymbol{cap}{symbols}{\mathbin}
511 \mdsy@DeclareSymbol{doublecup}{symbols}{\mathbin}
512 \mdsy@DeclareAlias{Cup}{symbols}{\mathbin}
513 \mdsy@DeclareSymbol{doublecap}{symbols}{\mathbin}
514 \mdsy@DeclareAlias{Cap}{symbols}{\mathbin}
515 \mdsy@DeclareSymbol{cupdot}{symbols}{\mathbin}
516 \mdsy@DeclareSymbol{capdot}{symbols}{\mathbin}
517 \mdsy@DeclareSymbol{cupplus}{symbols}{\mathbin}
518 \mdsy@DeclareAlias{uplus}{symbols}{\mathbin}

```



```

519 \mdsy@DeclareSymbol{capplus}{symbols}{\mathbin}
520 \mdsy@DeclareSymbol{sqcup}{symbols}{\mathbin}
521 \mdsy@DeclareSymbol{sqcap}{symbols}{\mathbin}
522 \mdsy@DeclareSymbol{doublesqcup}{symbols}{\mathbin}
523 \mdsy@DeclareAlias{Sqcup}{symbols}{\mathbin}
524 \mdsy@DeclareSymbol{doublesqcap}{symbols}{\mathbin}
525 \mdsy@DeclareAlias{Sqcap}{symbols}{\mathbin}
526 \mdsy@DeclareSymbol{sqcupdot}{symbols}{\mathbin}
527 \mdsy@DeclareSymbol{sqcapdot}{symbols}{\mathbin}
528 \mdsy@DeclareSymbol{sqcupplus}{symbols}{\mathbin}
529 \mdsy@DeclareSymbol{sqcapplus}{symbols}{\mathbin}
530 \mdsy@DeclareSymbol{pullback}{symbols}{\mathbin}
531 \mdsy@DeclareSymbol{pushout}{symbols}{\mathbin}
532 \mdsy@DeclareSymbol{smalltriangleright}{symbols}{\mathbin}
533 \mdsy@DeclareSymbol{smalltriangleup}{symbols}{\mathbin}
534 \mdsy@DeclareSymbol{smalltriangleleft}{symbols}{\mathbin}
535 \mdsy@DeclareSymbol{smalltriangledown}{symbols}{\mathbin}
536 \mdsy@DeclareSymbol{smallblacktriangleright}{symbols}{\mathbin}
537 \mdsy@DeclareSymbol{smallblacktriangleup}{symbols}{\mathbin}
538 \mdsy@DeclareSymbol{smallblacktriangleleft}{symbols}{\mathbin}
539 \mdsy@DeclareSymbol{smallblacktriangledown}{symbols}{\mathbin}
540 \mdsy@DeclareSymbol{medtriangleright}{symbols}{\mathbin}
541 \mdsy@DeclareAlias{triangleright}{symbols}{\mathbin}
542 \mdsy@DeclareSymbol{medtriangleup}{symbols}{\mathbin}
543 \mdsy@DeclareAlias{triangle}{symbols}{\mathbin}
544 \mdsy@DeclareAlias{vartriangle}{symbols}{\mathbin}
545 \mdsy@DeclareSymbol{medtriangleleft}{symbols}{\mathbin}
546 \mdsy@DeclareAlias{triangleleft}{symbols}{\mathbin}
547 \mdsy@DeclareSymbol{medtriangledown}{symbols}{\mathbin}
548 \mdsy@DeclareAlias{triangledown}{symbols}{\mathbin}
549 \mdsy@DeclareSymbol{medblacktriangleright}{symbols}{\mathbin}
550 \mdsy@DeclareAlias{blacktriangleright}{symbols}{\mathbin}
551 \mdsy@DeclareSymbol{medblacktriangleup}{symbols}{\mathbin}
552 \mdsy@DeclareAlias{blacktriangle}{symbols}{\mathbin}
553 \mdsy@DeclareSymbol{medblacktriangleleft}{symbols}{\mathbin}
554 \mdsy@DeclareAlias{blacktriangleleft}{symbols}{\mathbin}
555 \mdsy@DeclareSymbol{medblacktriangledown}{symbols}{\mathbin}
556 \mdsy@DeclareAlias{blacktriangledown}{symbols}{\mathbin}
557 \mdsy@DeclareSymbol{largetriangleup}{symbols}{\mathord}
558 \mdsy@DeclareAlias{bigtriangleup}{symbols}{\mathbin}
559 \mdsy@DeclareSymbol{largetriangledown}{symbols}{\mathord}
560 \mdsy@DeclareAlias{bigtriangledown}{symbols}{\mathbin}
561 \mdsy@DeclareSymbol{smallcircle}{symbols}{\mathbin}
562 \mdsy@DeclareAlias{circ}{symbols}{\mathbin}
563 \mdsy@DeclareAlias{smwhtcircle}{symbols}{\mathbin}

```

```

564 \mdsy@DeclareSymbol{smallblackcircle}{symbols}{\mathbin}
565 \mdsy@DeclareAlias{bullet}{symbols}{\mathbin}
566 \mdsy@DeclareAlias{smbllkcircle}{symbols}{\mathbin}
567 \mdsy@DeclareSymbol{medcircle}{symbols}{\mathbin}
568 \mdsy@DeclareAlias{mdlgwhtcircle}{symbols}{\mathbin}
569 \mdsy@DeclareSymbol{medblackcircle}{symbols}{\mathbin}
570 \mdsy@DeclareAlias{mdlgblkcircle}{symbols}{\mathbin}
571 \mdsy@DeclareSymbol{ominus}{symbols}{\mathbin}
572 \mdsy@DeclareSymbol{overt}{symbols}{\mathbin}
573 \mdsy@DeclareAlias{circledvert}{symbols}{\mathbin}
574 \mdsy@DeclareSymbol{oslash}{symbols}{\mathbin}
575 \mdsy@DeclareSymbol{obackslash}{symbols}{\mathbin}
576 \mdsy@DeclareAlias{obslash}{symbols}{\mathbin}
577 \mdsy@DeclareSymbol{oplus}{symbols}{\mathbin}
578 \mdsy@DeclareSymbol{otimes}{symbols}{\mathbin}
579 \mdsy@DeclareSymbol{odot}{symbols}{\mathbin}
580 \mdsy@DeclareSymbol{ocirc}{symbols}{\mathbin}
581 \mdsy@DeclareAlias{circledcirc}{symbols}{\mathbin}
582 \mdsy@DeclareSymbol{oast}{symbols}{\mathbin}
583 \mdsy@DeclareAlias{circledast}{symbols}{\mathbin}
584 \mdsy@DeclareSymbol{odash}{symbols}{\mathbin}
585 \mdsy@DeclareAlias{circleddash}{symbols}{\mathbin}
586 \mdsy@DeclareSymbol{oequal}{symbols}{\mathbin}
587 \mdsy@DeclareAlias{circledequal}{symbols}{\mathbin}
588 \mdsy@DeclareSymbol{emptyset}{symbols}{\mathord}
589 \mdsy@DeclareAlias{diameter}{symbols}{\mathord}
590 \mdsy@DeclareAlias{varnothing}{symbols}{\mathord}
591 \mdsy@DeclareSymbol{revemptyset}{symbols}{\mathord}
592 \mdsy@DeclareSymbol{largecircle}{symbols}{\mathord}
593 \mdsy@DeclareAlias{bigcirc}{symbols}{\mathord}
594 \mdsy@DeclareAlias{lgwhtcircle}{symbols}{\mathord}
595 \mdsy@DeclareSymbol{largeblackcircle}{symbols}{\mathord}
596 \mdsy@DeclareAlias{lgblkcircle}{symbols}{\mathord}
597 \mdsy@DeclareSymbol{smallsquare}{symbols}{\mathbin}
598 \mdsy@DeclareAlias{smwhtsquare}{symbols}{\mathbin}
599 \mdsy@DeclareSymbol{smallblacksquare}{symbols}{\mathbin}
600 \mdsy@DeclareAlias{smbllksquare}{symbols}{\mathbin}
601 \mdsy@DeclareSymbol{medsquare}{symbols}{\mathbin}
602 \mdsy@DeclareAlias{square}{symbols}{\mathbin}
603 \mdsy@DeclareAlias{Box}{symbols}{\mathbin}
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#### MdSymbolB: relations

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979 \mdsy@DeclareSymbol{nsucceq}{relations}{\mathrel}
980 \mdsy@DeclareSymbol{npreccurlyeq}{relations}{\mathrel}
981 \mdsy@DeclareSymbol{nsucccurlyeq}{relations}{\mathrel}
982 \mdsy@DeclareSymbol{npreceqq}{relations}{\mathrel}
983 \mdsy@DeclareSymbol{nsucceqq}{relations}{\mathrel}
984 \mdsy@DeclareSymbol{nprecsim}{relations}{\mathrel}
985 \mdsy@DeclareSymbol{nsuccsim}{relations}{\mathrel}
986 \mdsy@DeclareSymbol{nprecapprox}{relations}{\mathrel}
987 \mdsy@DeclareSymbol{nsuccapprox}{relations}{\mathrel}
988 \mdsy@DeclareSymbol{nlessdot}{relations}{\mathrel}
989 \mdsy@DeclareSymbol{ngtrdot}{relations}{\mathrel}
990 \mdsy@DeclareSymbol{nleqdot}{relations}{\mathrel}
991 \mdsy@DeclareSymbol{ngeqdot}{relations}{\mathrel}
992 \mdsy@DeclareSymbol{nleqslantdot}{relations}{\mathrel}
993 \mdsy@DeclareAlias{nlesdot}{relations}{\mathrel}
994 \mdsy@DeclareSymbol{ngeqslantdot}{relations}{\mathrel}
995 \mdsy@DeclareAlias{ngesdot}{relations}{\mathrel}
996 \mdsy@DeclareSymbol{neqslantless}{relations}{\mathrel}
997 \mdsy@DeclareSymbol{neqslantgtr}{relations}{\mathrel}
998 \mdsy@DeclareSymbol{ncurlyeqprec}{relations}{\mathrel}
999 \mdsy@DeclareSymbol{ncurlyeqsucc}{relations}{\mathrel}
1000 \mdsy@DeclareSymbol{simneqq}{relations}{\mathrel}
1001 \mdsy@DeclareSymbol{backsimneqq}{relations}{\mathrel}
1002 \mdsy@DeclareSymbol{lneq}{relations}{\mathrel}
1003 \mdsy@DeclareSymbol{gneq}{relations}{\mathrel}
1004 \mdsy@DeclareSymbol{lneqq}{relations}{\mathrel}
1005 \mdsy@DeclareAlias{lvertneqq}{relations}{\mathrel}
1006 \mdsy@DeclareSymbol{gneqq}{relations}{\mathrel}
1007 \mdsy@DeclareAlias{gvertneqq}{relations}{\mathrel}
1008 \mdsy@DeclareSymbol{lnsim}{relations}{\mathrel}
1009 \mdsy@DeclareSymbol{gnsim}{relations}{\mathrel}
1010 \mdsy@DeclareSymbol{lnapprox}{relations}{\mathrel}
1011 \mdsy@DeclareSymbol{gnapprox}{relations}{\mathrel}
1012 \mdsy@DeclareSymbol{sqsubsetneq}{relations}{\mathrel}

```

```

1013 \mdsy@DeclareSymbol{sqsupsetneq}{relations}{\mathrel}
1014 \mdsy@DeclareSymbol{sqsubsetneqq}{relations}{\mathrel}
1015 \mdsy@DeclareSymbol{sqsupsetneqq}{relations}{\mathrel}
1016 \mdsy@DeclareSymbol{subsetneq}{relations}{\mathrel}
1017 \mdsy@DeclareAlias{varsubsetneq}{relations}{\mathrel}
1018 \mdsy@DeclareSymbol{supsetneq}{relations}{\mathrel}
1019 \mdsy@DeclareAlias{varsupsetneq}{relations}{\mathrel}
1020 \mdsy@DeclareSymbol{subsetneqq}{relations}{\mathrel}
1021 \mdsy@DeclareAlias{varsubsetneqq}{relations}{\mathrel}
1022 \mdsy@DeclareSymbol{supsetneqq}{relations}{\mathrel}
1023 \mdsy@DeclareAlias{varsupsetneqq}{relations}{\mathrel}
1024 \mdsy@DeclareSymbol{precneq}{relations}{\mathrel}
1025 \mdsy@DeclareSymbol{succneq}{relations}{\mathrel}
1026 \mdsy@DeclareSymbol{precneqq}{relations}{\mathrel}
1027 \mdsy@DeclareSymbol{succneqq}{relations}{\mathrel}
1028 \mdsy@DeclareSymbol{precnsim}{relations}{\mathrel}
1029 \mdsy@DeclareSymbol{succnsim}{relations}{\mathrel}
1030 \mdsy@DeclareSymbol{precnapprox}{relations}{\mathrel}
1031 \mdsy@DeclareSymbol{succnapprox}{relations}{\mathrel}

```

MdSymbolC: arrows and turnstile symbols

```

1032 \mdsy@setslot{0}
1033 \mdsy@DeclareSymbol{rightarrow}{arrows}{\mathrel}
1034 \mdsy@DeclareAlias{to}{arrows}{\mathrel}
1035 % \mdsy@DeclareSymbol{uparrow}{arrows}{\mathrel}
1036 \mdsy@nextslot %uparrow defined below
1037 \mdsy@DeclareSymbol{leftarrow}{arrows}{\mathrel}
1038 \mdsy@DeclareAlias{gets}{arrows}{\mathrel}
1039 % \mdsy@DeclareSymbol{downarrow}{arrows}{\mathrel}
1040 \mdsy@nextslot %downarrow defined below
1041 \mdsy@DeclareSymbol{nearrow}{arrows}{\mathrel}
1042 \mdsy@DeclareSymbol{nwarrow}{arrows}{\mathrel}
1043 \mdsy@DeclareSymbol{swarrow}{arrows}{\mathrel}
1044 \mdsy@DeclareSymbol{searrow}{arrows}{\mathrel}
1045 \mdsy@DeclareSymbol{Rightarrow}{arrows}{\mathrel}
1046 % \mdsy@DeclareSymbol{Uparrow}{arrows}{\mathrel}
1047 \mdsy@nextslot %Uparrow defined below
1048 \mdsy@DeclareSymbol{Leftarrow}{arrows}{\mathrel}
1049 % \mdsy@DeclareSymbol{Downarrow}{arrows}{\mathrel}
1050 \mdsy@nextslot %Downarrow defined below
1051 \mdsy@DeclareSymbol{Nearrow}{arrows}{\mathrel}
1052 \mdsy@DeclareSymbol{Nwarrow}{arrows}{\mathrel}
1053 \mdsy@DeclareSymbol{Swarrow}{arrows}{\mathrel}
1054 \mdsy@DeclareSymbol{Searrow}{arrows}{\mathrel}
1055 \mdsy@DeclareSymbol{leftrightharrow}{arrows}{\mathrel}
1056 % \mdsy@DeclareSymbol{updownarrow}{arrows}{\mathrel}

```

```

1057 \mdsy@nextslot %updownarrow defined below
1058 \mdsy@DeclareSymbol{neswarrow}{arrows}{\mathrel}
1059 \mdsy@DeclareSymbol{nwsearrow}{arrows}{\mathrel}
1060 \mdsy@DeclareSymbol{Leftrightarrow}{arrows}{\mathrel}
1061 % \mdsy@DeclareSymbol{Updownarrow}{arrows}{\mathrel}
1062 \mdsy@nextslot %Updownarrow defined below
1063 \mdsy@DeclareSymbol{Neswarrow}{arrows}{\mathrel}
1064 \mdsy@DeclareSymbol{Nwsearrow}{arrows}{\mathrel}
1065 \mdsy@DeclareSymbol{twoheadrightarrow}{arrows}{\mathrel}
1066 \mdsy@DeclareSymbol{twoheaduparrow}{arrows}{\mathrel}
1067 \mdsy@DeclareSymbol{twoheadleftarrow}{arrows}{\mathrel}
1068 \mdsy@DeclareSymbol{twoheaddownarrow}{arrows}{\mathrel}
1069 \mdsy@DeclareSymbol{twoheadnearrow}{arrows}{\mathrel}
1070 \mdsy@DeclareSymbol{twoheadnwarrow}{arrows}{\mathrel}
1071 \mdsy@DeclareSymbol{twoheadswarrow}{arrows}{\mathrel}
1072 \mdsy@DeclareSymbol{twoheadsearrow}{arrows}{\mathrel}
1073 \mdsy@DeclareSymbol{rightarrowtail}{arrows}{\mathrel}
1074 \mdsy@DeclareSymbol{uparrowtail}{arrows}{\mathrel}
1075 \mdsy@DeclareSymbol{leftarrowtail}{arrows}{\mathrel}
1076 \mdsy@DeclareSymbol{downarrowtail}{arrows}{\mathrel}
1077 \mdsy@DeclareSymbol{nearrowtail}{arrows}{\mathrel}
1078 \mdsy@DeclareSymbol{nwarrowtail}{arrows}{\mathrel}
1079 \mdsy@DeclareSymbol{swarrowtail}{arrows}{\mathrel}
1080 \mdsy@DeclareSymbol{searrowtail}{arrows}{\mathrel}
1081 \mdsy@DeclareSymbol{rightmapsto}{arrows}{\mathrel}
1082 \mdsy@DeclareAlias{mapsto}{arrows}{\mathrel}
1083 \mdsy@DeclareSymbol{upmapsto}{arrows}{\mathrel}
1084 \mdsy@DeclareAlias{mapsup}{arrows}{\mathrel}
1085 \mdsy@DeclareSymbol{leftmapsto}{arrows}{\mathrel}
1086 \mdsy@DeclareAlias{mapsfrom}{arrows}{\mathrel}
1087 \mdsy@DeclareSymbol{downmapsto}{arrows}{\mathrel}
1088 \mdsy@DeclareAlias{mapsdown}{arrows}{\mathrel}
1089 \mdsy@DeclareSymbol{Rightmapsto}{arrows}{\mathrel}
1090 \mdsy@DeclareAlias{Mapsto}{arrows}{\mathrel}
1091 \mdsy@DeclareSymbol{Upmapsto}{arrows}{\mathrel}
1092 \mdsy@DeclareAlias{Mapsup}{arrows}{\mathrel}
1093 \mdsy@DeclareSymbol{Leftmapsto}{arrows}{\mathrel}
1094 \mdsy@DeclareAlias{Mapsfrom}{arrows}{\mathrel}
1095 \mdsy@DeclareSymbol{Downmapsto}{arrows}{\mathrel}
1096 \mdsy@DeclareAlias{Mapsdown}{arrows}{\mathrel}
1097 \mdsy@DeclareSymbol{hookrightarrow}{arrows}{\mathrel}
1098 \mdsy@DeclareAlias{lhookrightarrow}{arrows}{\mathrel}
1099 \mdsy@DeclareSymbol{hookuparrow}{arrows}{\mathrel}
1100 \mdsy@DeclareAlias{lhookuparrow}{arrows}{\mathrel}
1101 \mdsy@DeclareSymbol{varhookleftarrow}{arrows}{\mathrel}

```

```

1102 \mdsy@DeclareAlias{lhookleftarrow}{arrows}{\mathrel}
1103 \mdsy@DeclareSymbol{varhookdownarrow}{arrows}{\mathrel}
1104 \mdsy@DeclareAlias{lhookdownarrow}{arrows}{\mathrel}
1105 \mdsy@DeclareSymbol{varhooknearrow}{arrows}{\mathrel}
1106 \mdsy@DeclareAlias{lhooknearrow}{arrows}{\mathrel}
1107 \mdsy@DeclareSymbol{hooknwarrow}{arrows}{\mathrel}
1108 \mdsy@DeclareAlias{hknwarrow}{arrows}{\mathrel}
1109 \mdsy@DeclareAlias{lhooknwarrow}{arrows}{\mathrel}
1110 \mdsy@DeclareSymbol{varhookswarrow}{arrows}{\mathrel}
1111 \mdsy@DeclareAlias{lhookswarrow}{arrows}{\mathrel}
1112 \mdsy@DeclareSymbol{hooksearrow}{arrows}{\mathrel}
1113 \mdsy@DeclareAlias{hksearrow}{arrows}{\mathrel}
1114 \mdsy@DeclareAlias{lhooksearrow}{arrows}{\mathrel}
1115 \mdsy@DeclareSymbol{varhookrightarrow}{arrows}{\mathrel}
1116 \mdsy@DeclareAlias{rhookrightarrow}{arrows}{\mathrel}
1117 \mdsy@DeclareSymbol{varhookuparrow}{arrows}{\mathrel}
1118 \mdsy@DeclareAlias{rhookuparrow}{arrows}{\mathrel}
1119 \mdsy@DeclareSymbol{hookleftarrow}{arrows}{\mathrel}
1120 \mdsy@DeclareAlias{rhookleftarrow}{arrows}{\mathrel}
1121 \mdsy@DeclareSymbol{hookdownarrow}{arrows}{\mathrel}
1122 \mdsy@DeclareAlias{rhookdownarrow}{arrows}{\mathrel}
1123 \mdsy@DeclareSymbol{hooknearrow}{arrows}{\mathrel}
1124 \mdsy@DeclareAlias{hknearrow}{arrows}{\mathrel}
1125 \mdsy@DeclareAlias{rhooknearrow}{arrows}{\mathrel}
1126 \mdsy@DeclareSymbol{varhooknwarrow}{arrows}{\mathrel}
1127 \mdsy@DeclareAlias{rhooknwarrow}{arrows}{\mathrel}
1128 \mdsy@DeclareSymbol{hookswarrow}{arrows}{\mathrel}
1129 \mdsy@DeclareAlias{hkswarrow}{arrows}{\mathrel}
1130 \mdsy@DeclareAlias{rhookswarrow}{arrows}{\mathrel}
1131 \mdsy@DeclareSymbol{varhooksearrow}{arrows}{\mathrel}
1132 \mdsy@DeclareAlias{rhooksearrow}{arrows}{\mathrel}
1133 \mdsy@DeclareSymbol{rightharpoonup}{arrows}{\mathrel}
1134 \mdsy@DeclareSymbol{upharpoonleft}{arrows}{\mathrel}
1135 \mdsy@DeclareSymbol{leftharpoondown}{arrows}{\mathrel}
1136 \mdsy@DeclareSymbol{downharpoonright}{arrows}{\mathrel}
1137 \mdsy@DeclareSymbol{neharpoonnw}{arrows}{\mathrel}
1138 \mdsy@DeclareSymbol{nwharpoonsw}{arrows}{\mathrel}
1139 \mdsy@DeclareSymbol{swharpoonse}{arrows}{\mathrel}
1140 \mdsy@DeclareSymbol{seharpoonne}{arrows}{\mathrel}
1141 \mdsy@DeclareSymbol{rightharpoondown}{arrows}{\mathrel}
1142 \mdsy@DeclareSymbol{upharpoonright}{arrows}{\mathrel}
1143 \mdsy@DeclareAlias{restriction}{arrows}{\mathrel}
1144 \mdsy@DeclareSymbol{leftharpoonup}{arrows}{\mathrel}
1145 \mdsy@DeclareSymbol{downharpoonleft}{arrows}{\mathrel}
1146 \mdsy@DeclareSymbol{neharpoonse}{arrows}{\mathrel}

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1147 \mdsy@DeclareSymbol{nwharpoonne}{arrows}{\mathrel}
1148 \mdsy@DeclareSymbol{swharpoonnw}{arrows}{\mathrel}
1149 \mdsy@DeclareSymbol{seharpoonsw}{arrows}{\mathrel}
1150 \mdsy@DeclareSymbol{leftrightharpoonupdown}{arrows}{\mathrel}
1151 \mdsy@DeclareSymbol{updownharpoonleftright}{arrows}{\mathrel}
1152 \mdsy@DeclareSymbol{neswharpoonnwse}{arrows}{\mathrel}
1153 \mdsy@DeclareSymbol{nwseharpoonnesw}{arrows}{\mathrel}
1154 \mdsy@DeclareSymbol{leftrightharpoondownup}{arrows}{\mathrel}
1155 \mdsy@DeclareSymbol{updownharpoonrightleft}{arrows}{\mathrel}
1156 \mdsy@DeclareSymbol{neswharpoonsenw}{arrows}{\mathrel}
1157 \mdsy@DeclareSymbol{nwseharpoonswne}{arrows}{\mathrel}
1158 \mdsy@DeclareSymbol{rightleftharpoons}{arrows}{\mathrel}
1159 \mdsy@DeclareSymbol{updownharpoons}{arrows}{\mathrel}
1160 \mdsy@DeclareAlias{updownharpoonsleftright}{arrows}{\mathrel}
1161 \mdsy@DeclareSymbol{neswharpoons}{arrows}{\mathrel}
1162 \mdsy@DeclareSymbol{senwharpoons}{arrows}{\mathrel}
1163 \mdsy@DeclareSymbol{leftrightharpoons}{arrows}{\mathrel}
1164 \mdsy@DeclareSymbol{downupharpoons}{arrows}{\mathrel}
1165 \mdsy@DeclareAlias{downupharpoonsleftright}{arrows}{\mathrel}
1166 \mdsy@DeclareSymbol{swneharpoons}{arrows}{\mathrel}
1167 \mdsy@DeclareSymbol{nwseharpoons}{arrows}{\mathrel}
1168 \mdsy@DeclareSymbol{rightbkarrow}{arrows}{\mathrel}
1169 \mdsy@DeclareAlias{dashedarrow}{arrows}{\mathrel}
1170 \mdsy@DeclareAlias{dashrightarrow}{arrows}{\mathrel}
1171 \mdsy@DeclareSymbol{upbkarrow}{arrows}{\mathrel}
1172 \mdsy@DeclareSymbol{leftbkarrow}{arrows}{\mathrel}
1173 \mdsy@DeclareAlias{dashleftarrow}{arrows}{\mathrel}
1174 \mdsy@DeclareSymbol{downbkarrow}{arrows}{\mathrel}
1175 \mdsy@DeclareSymbol{nebkarrow}{arrows}{\mathrel}
1176 \mdsy@DeclareSymbol{nwbkarrow}{arrows}{\mathrel}
1177 \mdsy@DeclareSymbol{swbkarrow}{arrows}{\mathrel}
1178 \mdsy@DeclareSymbol{sebkarrow}{arrows}{\mathrel}
1179 \mdsy@DeclareSymbol{rightspoon}{arrows}{\mathrel}
1180 \mdsy@DeclareAlias{multimap}{arrows}{\mathrel}
1181 \mdsy@DeclareSymbol{upspoon}{arrows}{\mathrel}
1182 \mdsy@DeclareAlias{cirmid}{arrows}{\mathrel}
1183 \mdsy@DeclareSymbol{leftspoon}{arrows}{\mathrel}
1184 \mdsy@DeclareAlias{multimapinv}{arrows}{\mathrel}
1185 \mdsy@DeclareSymbol{downspoon}{arrows}{\mathrel}
1186 \mdsy@DeclareAlias{midcir}{arrows}{\mathrel}
1187 \mdsy@DeclareSymbol{rightblackspoon}{arrows}{\mathrel}
1188 \mdsy@DeclareSymbol{upblackspoon}{arrows}{\mathrel}
1189 \mdsy@DeclareSymbol{leftblackspoon}{arrows}{\mathrel}
1190 \mdsy@DeclareSymbol{downblackspoon}{arrows}{\mathrel}
1191 \mdsy@DeclareSymbol{leftrightspoon}{arrows}{\mathrel}

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1192 \mdsy@DeclareAlias{dualmap}{arrows}{\mathrel}
1193 \mdsy@DeclareSymbol{leftrightblackspoon}{arrows}{\mathrel}
1194 \mdsy@DeclareSymbol{blackwhitespoon}{arrows}{\mathrel}
1195 \mdsy@DeclareAlias{imageof}{arrows}{\mathrel}
1196 \mdsy@DeclareSymbol{whiteblackspoon}{arrows}{\mathrel}
1197 \mdsy@DeclareAlias{origof}{arrows}{\mathrel}
1198 \mdsy@DeclareSymbol{rightpitchfork}{arrows}{\mathrel}
1199 \mdsy@DeclareSymbol{uppitchfork}{arrows}{\mathrel}
1200 \mdsy@DeclareAlias{pitchfork}{arrows}{\mathrel}
1201 \mdsy@DeclareSymbol{leftpitchfork}{arrows}{\mathrel}
1202 \mdsy@DeclareSymbol{downpitchfork}{arrows}{\mathrel}
1203 \mdsy@DeclareSymbol{rightrightarrow}{arrows}{\mathrel}
1204 \mdsy@DeclareSymbol{upuparrows}{arrows}{\mathrel}
1205 \mdsy@DeclareSymbol{leftleftarrows}{arrows}{\mathrel}
1206 \mdsy@DeclareSymbol{downdownarrows}{arrows}{\mathrel}
1207 \mdsy@DeclareSymbol{nene arrows}{arrows}{\mathrel}
1208 \mdsy@DeclareSymbol{nnwnarrows}{arrows}{\mathrel}
1209 \mdsy@DeclareSymbol{swswarrows}{arrows}{\mathrel}
1210 \mdsy@DeclareSymbol{sesearrows}{arrows}{\mathrel}
1211 \mdsy@DeclareSymbol{rightleftarrows}{arrows}{\mathrel}
1212 \mdsy@DeclareSymbol{updownarrows}{arrows}{\mathrel}
1213 \mdsy@DeclareSymbol{neswarrows}{arrows}{\mathrel}
1214 \mdsy@DeclareSymbol{nwsearrows}{arrows}{\mathrel}
1215 \mdsy@DeclareSymbol{leftrightarrows}{arrows}{\mathrel}
1216 \mdsy@DeclareSymbol{downuparrows}{arrows}{\mathrel}
1217 \mdsy@DeclareSymbol{swnearrows}{arrows}{\mathrel}
1218 \mdsy@DeclareSymbol{senwarrows}{arrows}{\mathrel}
1219 \mdsy@DeclareSymbol{rightwvearrow}{arrows}{\mathrel}
1220 \mdsy@DeclareAlias{leadsto}{arrows}{\mathrel}
1221 \mdsy@DeclareAlias{rightsquigarrow}{arrows}{\mathrel}
1222 \mdsy@DeclareAlias{rightcurvedarrow}{arrows}{\mathrel}
1223 \mdsy@DeclareAlias{rightlsquigarrow}{arrows}{\mathrel}
1224 \mdsy@DeclareSymbol{varupwvearrow}{arrows}{\mathrel}
1225 \mdsy@DeclareAlias{uplsquigarrow}{arrows}{\mathrel}
1226 \mdsy@DeclareSymbol{varleftwvearrow}{arrows}{\mathrel}
1227 \mdsy@DeclareAlias{leftlsquigarrow}{arrows}{\mathrel}
1228 \mdsy@DeclareSymbol{downwvearrow}{arrows}{\mathrel}
1229 \mdsy@DeclareAlias{downlsquigarrow}{arrows}{\mathrel}
1230 \mdsy@DeclareSymbol{varrightwvearrow}{arrows}{\mathrel}
1231 \mdsy@DeclareAlias{righttrsquigarrow}{arrows}{\mathrel}
1232 \mdsy@DeclareSymbol{upwvearrow}{arrows}{\mathrel}
1233 \mdsy@DeclareAlias{uprsquigarrow}{arrows}{\mathrel}
1234 \mdsy@DeclareSymbol{leftwvearrow}{arrows}{\mathrel}
1235 \mdsy@DeclareAlias{leftsquigarrow}{arrows}{\mathrel}
1236 \mdsy@DeclareAlias{leftcurvedarrow}{arrows}{\mathrel}

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1237 \mdsy@DeclareAlias{leftrsquigarrow}{arrows}{\mathrel}
1238 \mdsy@DeclareSymbol{vardownwavedarrow}{arrows}{\mathrel}
1239 \mdsy@DeclareAlias{downrsquigarrow}{arrows}{\mathrel}
1240 \mdsy@DeclareSymbol{leftrightwavedarrow}{arrows}{\mathrel}
1241 \mdsy@DeclareAlias{leftrightsquigarrow}{arrows}{\mathrel}
1242 \mdsy@DeclareSymbol{updownwavedarrow}{arrows}{\mathrel}
1243 \mdsy@DeclareAlias{updownsquigarrow}{arrows}{\mathrel}
1244 \mdsy@DeclareSymbol{varleftrightwavedarrow}{arrows}{\mathrel}
1245 \mdsy@DeclareAlias{rightleftsquigarrow}{arrows}{\mathrel}
1246 \mdsy@DeclareSymbol{varupdownwavedarrow}{arrows}{\mathrel}
1247 \mdsy@DeclareAlias{downupsquigarrow}{arrows}{\mathrel}
1248 \mdsy@DeclareSymbol{cwoverarcarrow}{arrows}{\mathrel}
1249 \mdsy@DeclareAlias{curvearrowright}{arrows}{\mathrel}
1250 \mdsy@DeclareAlias{rightlcurvearrow}{arrows}{\mathrel}
1251 \mdsy@DeclareSymbol{cwleftarcarrow}{arrows}{\mathrel}
1252 \mdsy@DeclareAlias{uplcurvearrow}{arrows}{\mathrel}
1253 \mdsy@DeclareSymbol{cwunderarcarrow}{arrows}{\mathrel}
1254 \mdsy@DeclareAlias{leftlcurvearrow}{arrows}{\mathrel}
1255 \mdsy@DeclareSymbol{cwrightarcarrow}{arrows}{\mathrel}
1256 \mdsy@DeclareAlias{downlcurvearrow}{arrows}{\mathrel}
1257 \mdsy@DeclareSymbol{cwnwarccarrow}{arrows}{\mathrel}
1258 \mdsy@DeclareAlias{rightupcurvedarrow}{arrows}{\mathrel}
1259 \mdsy@DeclareAlias{nelcurvearrow}{arrows}{\mathrel}
1260 \mdsy@DeclareSymbol{cswwarccarrow}{arrows}{\mathrel}
1261 \mdsy@DeclareAlias{upleftcurvedarrow}{arrows}{\mathrel}
1262 \mdsy@DeclareAlias{nwlccurvearrow}{arrows}{\mathrel}
1263 \mdsy@DeclareSymbol{cwsearccarrow}{arrows}{\mathrel}
1264 \mdsy@DeclareAlias{leftdowncurvedarrow}{arrows}{\mathrel}
1265 \mdsy@DeclareAlias{swlccurvearrow}{arrows}{\mathrel}
1266 \mdsy@DeclareSymbol{cwnearccarrow}{arrows}{\mathrel}
1267 \mdsy@DeclareAlias{downrightcurvedarrow}{arrows}{\mathrel}
1268 \mdsy@DeclareAlias{selcurvearrow}{arrows}{\mathrel}
1269 \mdsy@DeclareSymbol{acwunderarcarrow}{arrows}{\mathrel}
1270 \mdsy@DeclareAlias{rightrcurvearrow}{arrows}{\mathrel}
1271 \mdsy@DeclareSymbol{acwrightarcarrow}{arrows}{\mathrel}
1272 \mdsy@DeclareAlias{uprccurvearrow}{arrows}{\mathrel}
1273 \mdsy@DeclareSymbol{acwoverarcarrow}{arrows}{\mathrel}
1274 \mdsy@DeclareAlias{curvearrowleft}{arrows}{\mathrel}
1275 \mdsy@DeclareAlias{leftrcurvearrow}{arrows}{\mathrel}
1276 \mdsy@DeclareSymbol{acwleftarcarrow}{arrows}{\mathrel}
1277 \mdsy@DeclareAlias{downrccurvearrow}{arrows}{\mathrel}
1278 \mdsy@DeclareSymbol{acwsearccarrow}{arrows}{\mathrel}
1279 \mdsy@DeclareAlias{uprightcurvearrow}{arrows}{\mathrel}
1280 \mdsy@DeclareAlias{nercurvearrow}{arrows}{\mathrel}
1281 \mdsy@DeclareSymbol{acwnearccarrow}{arrows}{\mathrel}

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1282 \mdsy@DeclareAlias{leftupcurvedarrow}{arrows}{\mathrel}
1283 \mdsy@DeclareAlias{nwrcurvearrow}{arrows}{\mathrel}
1284 \mdsy@DeclareSymbol{acwnwarcarrow}{arrows}{\mathrel}
1285 \mdsy@DeclareAlias{downleftcurvedarrow}{arrows}{\mathrel}
1286 \mdsy@DeclareAlias{swrcurvearrow}{arrows}{\mathrel}
1287 \mdsy@DeclareSymbol{acwswarcarrow}{arrows}{\mathrel}
1288 \mdsy@DeclareAlias{rightdowncurvedarrow}{arrows}{\mathrel}
1289 \mdsy@DeclareAlias{sercurvearrow}{arrows}{\mathrel}
1290 \mdsy@DeclareSymbol{bdoverarcarrow}{arrows}{\mathrel}
1291 \mdsy@DeclareAlias{leftrightcurvearrow}{arrows}{\mathrel}
1292 \mdsy@DeclareSymbol{bdleftarcarrow}{arrows}{\mathrel}
1293 \mdsy@DeclareAlias{updowncurvearrow}{arrows}{\mathrel}
1294 \mdsy@DeclareSymbol{bdunderarcarrow}{arrows}{\mathrel}
1295 \mdsy@DeclareAlias{rightleftcurvearrow}{arrows}{\mathrel}
1296 \mdsy@DeclareSymbol{bdrightarcarrow}{arrows}{\mathrel}
1297 \mdsy@DeclareAlias{downupcurvearrow}{arrows}{\mathrel}
1298 \mdsy@DeclareSymbol{bdnwarcarrow}{arrows}{\mathrel}
1299 \mdsy@DeclareAlias{neswcurvearrow}{arrows}{\mathrel}
1300 \mdsy@DeclareSymbol{bdswarcarrow}{arrows}{\mathrel}
1301 \mdsy@DeclareAlias{nwsecurvearrow}{arrows}{\mathrel}
1302 \mdsy@DeclareSymbol{bdsearcarrow}{arrows}{\mathrel}
1303 \mdsy@DeclareAlias{swnecurvearrow}{arrows}{\mathrel}
1304 \mdsy@DeclareSymbol{bdnearcarrow}{arrows}{\mathrel}
1305 \mdsy@DeclareAlias{senwcurvearrow}{arrows}{\mathrel}
1306 \mdsy@DeclareSymbol{leftfootline}{arrows}{\mathrel}
1307 \mdsy@DeclareSymbol{rightfootline}{arrows}{\mathrel}
1308 \mdsy@DeclareSymbol{acwcirclearrowup}{arrows}{\mathrel}
1309 \mdsy@DeclareSymbol{acwcirclearrowleft}{arrows}{\mathrel}
1310 \mdsy@DeclareAlias{circlearrowleft}{arrows}{\mathrel}
1311 \mdsy@DeclareAlias{acwopencirclearrow}{arrows}{\mathrel}
1312 \mdsy@DeclareSymbol{acwcirclearrowdown}{arrows}{\mathrel}
1313 \mdsy@DeclareAlias{acwgapcirclearrow}{arrows}{\mathrel}
1314 \mdsy@DeclareSymbol{acwcirclearrowright}{arrows}{\mathrel}
1315 \mdsy@DeclareSymbol{cwcirclearrowdown}{arrows}{\mathrel}
1316 \mdsy@DeclareAlias{cwgapcirclearrow}{arrows}{\mathrel}
1317 \mdsy@DeclareSymbol{cwcirclearrowright}{arrows}{\mathrel}
1318 \mdsy@DeclareAlias{circlearrowright}{arrows}{\mathrel}
1319 \mdsy@DeclareAlias{cwopencirclearrow}{arrows}{\mathrel}
1320 \mdsy@DeclareSymbol{cwcirclearrowup}{arrows}{\mathrel}
1321 \mdsy@DeclareSymbol{cwcirclearrowleft}{arrows}{\mathrel}
1322 \mdsy@DeclareSymbol{Rrightarrow}{arrows}{\mathrel}
1323 \mdsy@DeclareSymbol{Uparrow}{arrows}{\mathrel}
1324 \mdsy@DeclareSymbol{Lleftarrow}{arrows}{\mathrel}
1325 \mdsy@DeclareSymbol{Ddownarrow}{arrows}{\mathrel}
1326 \mdsy@DeclareSymbol{longrightarrow}{arrows}{\mathrel}

```

```

1327 \mdsy@DeclareSymbol{longleftarrow}{arrows}{\mathrel}
1328 \mdsy@DeclareSymbol{Longrightarrow}{arrows}{\mathrel}
1329 \mdsy@DeclareSymbol{Longleftarrow}{arrows}{\mathrel}
1330 \mdsy@DeclareSymbol{longlefttrightarrow}{arrows}{\mathrel}
1331 \mdsy@DeclareSymbol{Longlefttrightarrow}{arrows}{\mathrel}
1332 \mdsy@DeclareSymbol{longmapsto}{arrows}{\mathrel}
1333 \mdsy@DeclareSymbol{longmapsfrom}{arrows}{\mathrel}
1334 \mdsy@DeclareSymbol{Longmapsto}{arrows}{\mathrel}
1335 \mdsy@DeclareSymbol{Longmapsfrom}{arrows}{\mathrel}
1336 \mdsy@DeclareSymbol{longrightwvearrow}{arrows}{\mathrel}
1337 \mdsy@DeclareAlias{longleadsto}{arrows}{\mathrel}
1338 \mdsy@DeclareAlias{longrightsquigarrow}{arrows}{\mathrel}
1339 \mdsy@DeclareSymbol{longleftwvearrow}{arrows}{\mathrel}
1340 \mdsy@DeclareAlias{longleftsquigarrow}{arrows}{\mathrel}
1341 \mdsy@DeclareSymbol{longleftfootline}{arrows}{\mathrel}
1342 \mdsy@DeclareAlias{vlongdash}{arrows}{\mathrel}
1343 \mdsy@DeclareSymbol{longrightfootline}{arrows}{\mathrel}
1344 \mdsy@DeclareAlias{longdashv}{arrows}{\mathrel}
1345 \mdsy@DeclareSymbol{Lsh}{arrows}{\mathrel}
1346 \mdsy@DeclareSymbol{Rsh}{arrows}{\mathrel}
1347 \mdsy@DeclareSymbol{Ldsh}{arrows}{\mathrel}
1348 \mdsy@DeclareSymbol{Rdsh}{arrows}{\mathrel}
1349 \mdsy@DeclareSymbol{looparrowright}{arrows}{\mathrel}
1350 \mdsy@DeclareSymbol{looparrowleft}{arrows}{\mathrel}
1351 \mdsy@setslot{224}
1352 \mdsy@DeclareSymbol{rightvdash}{arrows}{\mathrel}
1353 \mdsy@DeclareAlias{vdash}{arrows}{\mathrel}
1354 \mdsy@DeclareSymbol{upvdash}{arrows}{\mathrel}
1355 \mdsy@DeclareAlias{perp}{arrows}{\mathrel}
1356 \mdsy@DeclareAlias{bot}{arrows}{\mathord}
1357 \mdsy@DeclareSymbol{leftvdash}{arrows}{\mathrel}
1358 \mdsy@DeclareAlias{dashv}{arrows}{\mathrel}
1359 \mdsy@DeclareSymbol{downvdash}{arrows}{\mathrel}
1360 \mdsy@DeclareAlias{top}{arrows}{\mathord}
1361 \mdsy@DeclareSymbol{rightassert}{arrows}{\mathrel}
1362 \mdsy@DeclareAlias{assert}{arrows}{\mathrel}
1363 \mdsy@DeclareAlias{shorttrighttack}{arrows}{\mathrel}
1364 \mdsy@DeclareSymbol{upassert}{arrows}{\mathrel}
1365 \mdsy@DeclareAlias{shortuptack}{arrows}{\mathrel}
1366 \mdsy@DeclareSymbol{leftassert}{arrows}{\mathrel}
1367 \mdsy@DeclareAlias{shortlefttack}{arrows}{\mathrel}
1368 \mdsy@DeclareSymbol{downassert}{arrows}{\mathrel}
1369 \mdsy@DeclareAlias{shortdowntack}{arrows}{\mathrel}
1370 \mdsy@DeclareSymbol{rightvDash}{arrows}{\mathrel}
1371 \mdsy@DeclareAlias{vDash}{arrows}{\mathrel}

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1372 \mdsy@DeclareSymbol{upvDash}{arrows}{\mathrel}
1373 \mdsy@DeclareAlias{Vbar}{arrows}{\mathrel}
1374 \mdsy@DeclareSymbol{leftvDash}{arrows}{\mathrel}
1375 \mdsy@DeclareAlias{Dashv}{arrows}{\mathrel}
1376 \mdsy@DeclareSymbol{downvDash}{arrows}{\mathrel}
1377 \mdsy@DeclareAlias{barV}{arrows}{\mathrel}
1378 \mdsy@DeclareSymbol{rightmodels}{arrows}{\mathrel}
1379 \mdsy@DeclareAlias{models}{arrows}{\mathrel}
1380 \mdsy@DeclareSymbol{upmodels}{arrows}{\mathrel}
1381 \mdsy@DeclareSymbol{leftmodels}{arrows}{\mathrel}
1382 \mdsy@DeclareSymbol{downmodels}{arrows}{\mathrel}
1383 \mdsy@DeclareSymbol{rightVdash}{arrows}{\mathrel}
1384 \mdsy@DeclareAlias{Vdash}{arrows}{\mathrel}
1385 \mdsy@DeclareSymbol{upVdash}{arrows}{\mathrel}
1386 \mdsy@DeclareSymbol{leftVdash}{arrows}{\mathrel}
1387 \mdsy@DeclareAlias{dashV}{arrows}{\mathrel}
1388 \mdsy@DeclareSymbol{downVdash}{arrows}{\mathrel}
1389 \mdsy@DeclareSymbol{rightAssert}{arrows}{\mathrel}
1390 \mdsy@DeclareAlias{Assert}{arrows}{\mathrel}
1391 \mdsy@DeclareSymbol{upAssert}{arrows}{\mathrel}
1392 \mdsy@DeclareAlias{vBar}{arrows}{\mathrel}
1393 \mdsy@DeclareSymbol{leftAssert}{arrows}{\mathrel}
1394 \mdsy@DeclareSymbol{downAssert}{arrows}{\mathrel}
1395 \mdsy@DeclareAlias{Barv}{arrows}{\mathrel}
1396 \mdsy@DeclareSymbol{rightVDash}{arrows}{\mathrel}
1397 \mdsy@DeclareAlias{VDash}{arrows}{\mathrel}
1398 \mdsy@DeclareSymbol{upVDash}{arrows}{\mathrel}
1399 \mdsy@DeclareSymbol{leftVDash}{arrows}{\mathrel}
1400 \mdsy@DeclareAlias{DashV}{arrows}{\mathrel}
1401 \mdsy@DeclareSymbol{downVDash}{arrows}{\mathrel}
1402 \mdsy@DeclareSymbol{Vvdash}{arrows}{\mathrel}
1403 \mdsy@DeclareSymbol{dashVv}{arrows}{\mathrel}
1404 \mdsy@DeclareSymbol{vDdash}{arrows}{\mathrel}
1405 \mdsy@DeclareSymbol{Ddashv}{arrows}{\mathrel}
1406
1407 \mdsy@DeclareRobustCommand{relbar}{\mathrel{\smash-}}
1408 \mdsy@DeclareRobustCommand{Relbar}{\mathrel=}
1409 \mdsy@DeclareRobustCommand{joinrel}{\mathrel{\mkern-4mu}}

MdSymbolD: stroked arrows
1410 \mdsy@setslot{0}
1411 \mdsy@DeclareSymbol{nrightarrow}{narrows}{\mathrel}
1412 \mdsy@DeclareAlias{nto}{narrows}{\mathrel}
1413 \mdsy@DeclareSymbol{nuparrow}{narrows}{\mathrel}
1414 \mdsy@DeclareSymbol{nleftarrow}{narrows}{\mathrel}
1415 \mdsy@DeclareAlias{ngets}{narrows}{\mathrel}

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1416 \mdsy@DeclareSymbol{ndownarrow}{narrows}{\mathrel}
1417 \mdsy@DeclareSymbol{nnearrow}{narrows}{\mathrel}
1418 \mdsy@DeclareSymbol{nnwarrow}{narrows}{\mathrel}
1419 \mdsy@DeclareSymbol{nswarrow}{narrows}{\mathrel}
1420 \mdsy@DeclareSymbol{nsearrow}{narrows}{\mathrel}
1421 \mdsy@DeclareSymbol{nrightarrow}{narrows}{\mathrel}
1422 \mdsy@DeclareSymbol{nuparrow}{narrows}{\mathrel}
1423 \mdsy@DeclareSymbol{nleftarrow}{narrows}{\mathrel}
1424 \mdsy@DeclareSymbol{ndownarrow}{narrows}{\mathrel}
1425 \mdsy@DeclareSymbol{nnearrow}{narrows}{\mathrel}
1426 \mdsy@DeclareSymbol{nnwarrow}{narrows}{\mathrel}
1427 \mdsy@DeclareSymbol{nswarrow}{narrows}{\mathrel}
1428 \mdsy@DeclareSymbol{nsearrow}{narrows}{\mathrel}
1429 \mdsy@DeclareSymbol{nleftrightarrow}{narrows}{\mathrel}
1430 \mdsy@DeclareSymbol{nupdownarrow}{narrows}{\mathrel}
1431 \mdsy@DeclareSymbol{nneswarrow}{narrows}{\mathrel}
1432 \mdsy@DeclareSymbol{nnwsearrow}{narrows}{\mathrel}
1433 \mdsy@DeclareSymbol{nleftrightarrow}{narrows}{\mathrel}
1434 \mdsy@DeclareSymbol{nupdownarrow}{narrows}{\mathrel}
1435 \mdsy@DeclareSymbol{nNeswarrow}{narrows}{\mathrel}
1436 \mdsy@DeclareSymbol{nNwsearrow}{narrows}{\mathrel}
1437 \mdsy@DeclareSymbol{ntwoheadrightarrow}{narrows}{\mathrel}
1438 \mdsy@DeclareSymbol{ntwoheaduparrow}{narrows}{\mathrel}
1439 \mdsy@DeclareSymbol{ntwoheadleftarrow}{narrows}{\mathrel}
1440 \mdsy@DeclareSymbol{ntwoheaddownarrow}{narrows}{\mathrel}
1441 \mdsy@DeclareSymbol{ntwoheadnearrow}{narrows}{\mathrel}
1442 \mdsy@DeclareSymbol{ntwoheadnwarrow}{narrows}{\mathrel}
1443 \mdsy@DeclareSymbol{ntwoheadswarrow}{narrows}{\mathrel}
1444 \mdsy@DeclareSymbol{ntwoheadsearrow}{narrows}{\mathrel}
1445 \mdsy@DeclareSymbol{nrightarrowtail}{narrows}{\mathrel}
1446 \mdsy@DeclareSymbol{nuparrowtail}{narrows}{\mathrel}
1447 \mdsy@DeclareSymbol{nleftarrowtail}{narrows}{\mathrel}
1448 \mdsy@DeclareSymbol{ndownarrowtail}{narrows}{\mathrel}
1449 \mdsy@DeclareSymbol{nnearrowtail}{narrows}{\mathrel}
1450 \mdsy@DeclareSymbol{nnwarrowtail}{narrows}{\mathrel}
1451 \mdsy@DeclareSymbol{nswarrowtail}{narrows}{\mathrel}
1452 \mdsy@DeclareSymbol{nsearrowtail}{narrows}{\mathrel}
1453 \mdsy@DeclareSymbol{nrightmapsto}{narrows}{\mathrel}
1454 \mdsy@DeclareAlias{nmapsto}{narrows}{\mathrel}
1455 \mdsy@DeclareSymbol{nupmapsto}{narrows}{\mathrel}
1456 \mdsy@DeclareAlias{nmapsup}{narrows}{\mathrel}
1457 \mdsy@DeclareSymbol{nleftmapsto}{narrows}{\mathrel}
1458 \mdsy@DeclareAlias{nmapfrom}{narrows}{\mathrel}
1459 \mdsy@DeclareSymbol{ndownmapsto}{narrows}{\mathrel}
1460 \mdsy@DeclareAlias{nmapdown}{narrows}{\mathrel}

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1461 \mdsy@DeclareSymbol{nRightmapsto}{narrows}{\mathrel}
1462 \mdsy@DeclareAlias{nMapsto}{narrows}{\mathrel}
1463 \mdsy@DeclareSymbol{nUpmapsto}{narrows}{\mathrel}
1464 \mdsy@DeclareAlias{nMapsup}{narrows}{\mathrel}
1465 \mdsy@DeclareSymbol{nLeftmapsto}{narrows}{\mathrel}
1466 \mdsy@DeclareAlias{nMapsfrom}{narrows}{\mathrel}
1467 \mdsy@DeclareSymbol{nDownmapsto}{narrows}{\mathrel}
1468 \mdsy@DeclareAlias{nMapsdown}{narrows}{\mathrel}
1469 \mdsy@DeclareSymbol{nhookrightarrow}{narrows}{\mathrel}
1470 \mdsy@DeclareSymbol{nhookuparrow}{narrows}{\mathrel}
1471 \mdsy@DeclareSymbol{nvarhookleftarrow}{narrows}{\mathrel}
1472 \mdsy@DeclareSymbol{nvarhookdownarrow}{narrows}{\mathrel}
1473 \mdsy@DeclareSymbol{nvarhooknearrow}{narrows}{\mathrel}
1474 \mdsy@DeclareSymbol{nhooknearrow}{narrows}{\mathrel}
1475 \mdsy@DeclareAlias{nhknnarrow}{narrows}{\mathrel}
1476 \mdsy@DeclareSymbol{nvarhookswarrow}{narrows}{\mathrel}
1477 \mdsy@DeclareSymbol{nhooksearrow}{narrows}{\mathrel}
1478 \mdsy@DeclareAlias{nhksearrow}{narrows}{\mathrel}
1479 \mdsy@DeclareSymbol{nvarhookrightarrow}{narrows}{\mathrel}
1480 \mdsy@DeclareSymbol{nvarhookuparrow}{narrows}{\mathrel}
1481 \mdsy@DeclareSymbol{nhookleftarrow}{narrows}{\mathrel}
1482 \mdsy@DeclareSymbol{nhookdownarrow}{narrows}{\mathrel}
1483 \mdsy@DeclareSymbol{nhooknearrow}{narrows}{\mathrel}
1484 \mdsy@DeclareAlias{nhknnearrow}{narrows}{\mathrel}
1485 \mdsy@DeclareSymbol{nvarhooknarrow}{narrows}{\mathrel}
1486 \mdsy@DeclareSymbol{nhookswarrow}{narrows}{\mathrel}
1487 \mdsy@DeclareAlias{nhkswarrow}{narrows}{\mathrel}
1488 \mdsy@DeclareSymbol{nvarhooksearrow}{narrows}{\mathrel}
1489 \mdsy@DeclareSymbol{nrightharpoonup}{narrows}{\mathrel}
1490 \mdsy@DeclareSymbol{nupharpoonleft}{narrows}{\mathrel}
1491 \mdsy@DeclareSymbol{nleftharpoondown}{narrows}{\mathrel}
1492 \mdsy@DeclareSymbol{ndownharpoonright}{narrows}{\mathrel}
1493 \mdsy@DeclareSymbol{nneharpoonnw}{narrows}{\mathrel}
1494 \mdsy@DeclareSymbol{nnwharpoonsw}{narrows}{\mathrel}
1495 \mdsy@DeclareSymbol{nswharpoonse}{narrows}{\mathrel}
1496 \mdsy@DeclareSymbol{nseharpoonne}{narrows}{\mathrel}
1497 \mdsy@DeclareSymbol{nrightharpoondown}{narrows}{\mathrel}
1498 \mdsy@DeclareSymbol{nupharpoonright}{narrows}{\mathrel}
1499 \mdsy@DeclareAlias{nrestriction}{narrows}{\mathrel}
1500 \mdsy@DeclareSymbol{nleftharpoonup}{narrows}{\mathrel}
1501 \mdsy@DeclareSymbol{ndownharpoonleft}{narrows}{\mathrel}
1502 \mdsy@DeclareSymbol{nneharpoonse}{narrows}{\mathrel}
1503 \mdsy@DeclareSymbol{nnwharpoonne}{narrows}{\mathrel}
1504 \mdsy@DeclareSymbol{nswharpoonnw}{narrows}{\mathrel}
1505 \mdsy@DeclareSymbol{nseharpoonsw}{narrows}{\mathrel}

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1506 \mdsy@DeclareSymbol{nleftrightharpoonupdown}{narrows}{\mathrel}
1507 \mdsy@DeclareSymbol{nupdownharpoonleftright}{narrows}{\mathrel}
1508 \mdsy@DeclareSymbol{nneswharpoonnwse}{narrows}{\mathrel}
1509 \mdsy@DeclareSymbol{nnwseharpoonnesw}{narrows}{\mathrel}
1510 \mdsy@DeclareSymbol{nleftrightharpoondownup}{narrows}{\mathrel}
1511 \mdsy@DeclareSymbol{nupdownharpoonrightleft}{narrows}{\mathrel}
1512 \mdsy@DeclareSymbol{nneswharpoonsenw}{narrows}{\mathrel}
1513 \mdsy@DeclareSymbol{nnwseharpoonswne}{narrows}{\mathrel}
1514 \mdsy@DeclareSymbol{nrightleftharpoons}{narrows}{\mathrel}
1515 \mdsy@DeclareSymbol{nupdownharpoons}{narrows}{\mathrel}
1516 \mdsy@DeclareAlias{nupdownharpoonsleftright}{narrows}{\mathrel}
1517 \mdsy@DeclareSymbol{nneswharpoons}{narrows}{\mathrel}
1518 \mdsy@DeclareSymbol{nsenwharpoons}{narrows}{\mathrel}
1519 \mdsy@DeclareSymbol{nleftrightharpoons}{narrows}{\mathrel}
1520 \mdsy@DeclareSymbol{ndownupharpoons}{narrows}{\mathrel}
1521 \mdsy@DeclareAlias{ndownupharpoonsleftright}{narrows}{\mathrel}
1522 \mdsy@DeclareSymbol{nswnharpoons}{narrows}{\mathrel}
1523 \mdsy@DeclareSymbol{nnwseharpoons}{narrows}{\mathrel}
1524 \mdsy@DeclareSymbol{nrightbkarrow}{narrows}{\mathrel}
1525 \mdsy@DeclareAlias{ndasharrow}{narrows}{\mathrel}
1526 \mdsy@DeclareAlias{ndashrightarrow}{narrows}{\mathrel}
1527 \mdsy@DeclareSymbol{nupbkarrow}{narrows}{\mathrel}
1528 \mdsy@DeclareSymbol{nleftbkarrow}{narrows}{\mathrel}
1529 \mdsy@DeclareAlias{ndashleftarrow}{narrows}{\mathrel}
1530 \mdsy@DeclareSymbol{ndownbkarrow}{narrows}{\mathrel}
1531 \mdsy@DeclareSymbol{nnebkarrow}{narrows}{\mathrel}
1532 \mdsy@DeclareSymbol{nnwbkarrow}{narrows}{\mathrel}
1533 \mdsy@DeclareSymbol{nswbkarrow}{narrows}{\mathrel}
1534 \mdsy@DeclareSymbol{nsebkarrow}{narrows}{\mathrel}
1535 \mdsy@DeclareSymbol{nrightspoon}{narrows}{\mathrel}
1536 \mdsy@DeclareAlias{nmultimap}{narrows}{\mathrel}
1537 \mdsy@DeclareSymbol{nupspoon}{narrows}{\mathrel}
1538 \mdsy@DeclareAlias{ncirmid}{narrows}{\mathrel}
1539 \mdsy@DeclareSymbol{nleftspoon}{narrows}{\mathrel}
1540 \mdsy@DeclareAlias{nmultimapinv}{narrows}{\mathrel}
1541 \mdsy@DeclareSymbol{ndownspoon}{narrows}{\mathrel}
1542 \mdsy@DeclareAlias{nmidcir}{narrows}{\mathrel}
1543 \mdsy@DeclareSymbol{nrightblackspoon}{narrows}{\mathrel}
1544 \mdsy@DeclareSymbol{nupblackspoon}{narrows}{\mathrel}
1545 \mdsy@DeclareSymbol{nleftblackspoon}{narrows}{\mathrel}
1546 \mdsy@DeclareSymbol{ndownblackspoon}{narrows}{\mathrel}
1547 \mdsy@DeclareSymbol{nleftrightspoon}{narrows}{\mathrel}
1548 \mdsy@DeclareAlias{ndualmap}{narrows}{\mathrel}
1549 \mdsy@DeclareSymbol{nleftrightblackspoon}{narrows}{\mathrel}
1550 \mdsy@DeclareSymbol{nblackwhitespoon}{narrows}{\mathrel}

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1551 \mdsy@DeclareAlias{nimageof}{narrows}{\mathrel}
1552 \mdsy@DeclareSymbol{nwhiteblackspoon}{narrows}{\mathrel}
1553 \mdsy@DeclareAlias{norigof}{narrows}{\mathrel}
1554 \mdsy@DeclareSymbol{nrightpitchfork}{narrows}{\mathrel}
1555 \mdsy@DeclareSymbol{nuppitchfork}{narrows}{\mathrel}
1556 \mdsy@DeclareAlias{npitchfork}{narrows}{\mathrel}
1557 \mdsy@DeclareSymbol{nleftpitchfork}{narrows}{\mathrel}
1558 \mdsy@DeclareSymbol{ndownpitchfork}{narrows}{\mathrel}
1559 \mdsy@DeclareSymbol{nrightarrows}{narrows}{\mathrel}
1560 \mdsy@DeclareSymbol{nuparrows}{narrows}{\mathrel}
1561 \mdsy@DeclareSymbol{nleftarrows}{narrows}{\mathrel}
1562 \mdsy@DeclareSymbol{ndownarrows}{narrows}{\mathrel}
1563 \mdsy@DeclareSymbol{nnearrows}{narrows}{\mathrel}
1564 \mdsy@DeclareSymbol{nnwnarrows}{narrows}{\mathrel}
1565 \mdsy@DeclareSymbol{nswarrows}{narrows}{\mathrel}
1566 \mdsy@DeclareSymbol{nsearrows}{narrows}{\mathrel}
1567 \mdsy@DeclareSymbol{nrightleftarrows}{narrows}{\mathrel}
1568 \mdsy@DeclareSymbol{nupdownarrows}{narrows}{\mathrel}
1569 \mdsy@DeclareSymbol{nneswarrows}{narrows}{\mathrel}
1570 \mdsy@DeclareSymbol{nnwsearrows}{narrows}{\mathrel}
1571 \mdsy@DeclareSymbol{nleftrightharrows}{narrows}{\mathrel}
1572 \mdsy@DeclareSymbol{ndownuparrows}{narrows}{\mathrel}
1573 \mdsy@DeclareSymbol{nswnearrows}{narrows}{\mathrel}
1574 \mdsy@DeclareSymbol{nsenwarrows}{narrows}{\mathrel}
1575 \mdsy@DeclareSymbol{nrightwvearrow}{narrows}{\mathrel}
1576 \mdsy@DeclareAlias{nleadsto}{narrows}{\mathrel}
1577 \mdsy@DeclareAlias{nrightsquigarrow}{narrows}{\mathrel}
1578 \mdsy@DeclareAlias{nrightcurvedarrow}{arrows}{\mathrel}
1579 \mdsy@DeclareAlias{nrightlsquigarrow}{narrows}{\mathrel}
1580 \mdsy@DeclareSymbol{nvarupwvearrow}{narrows}{\mathrel}
1581 \mdsy@DeclareAlias{nuplsquigarrow}{narrows}{\mathrel}
1582 \mdsy@DeclareSymbol{nvarleftwvearrow}{narrows}{\mathrel}
1583 \mdsy@DeclareAlias{nleftlsquigarrow}{narrows}{\mathrel}
1584 \mdsy@DeclareSymbol{ndownwvearrow}{narrows}{\mathrel}
1585 \mdsy@DeclareAlias{ndownlsquigarrow}{narrows}{\mathrel}
1586 \mdsy@DeclareSymbol{nvarrightwvearrow}{narrows}{\mathrel}
1587 \mdsy@DeclareAlias{nrightrsquigarrow}{narrows}{\mathrel}
1588 \mdsy@DeclareSymbol{nupwvearrow}{narrows}{\mathrel}
1589 \mdsy@DeclareAlias{nuprsquigarrow}{narrows}{\mathrel}
1590 \mdsy@DeclareSymbol{nleftwvearrow}{narrows}{\mathrel}
1591 \mdsy@DeclareAlias{nleftsquigarrow}{narrows}{\mathrel}
1592 \mdsy@DeclareAlias{nleftcurvedarrow}{arrows}{\mathrel}
1593 \mdsy@DeclareAlias{nlefttrsquigarrow}{narrows}{\mathrel}
1594 \mdsy@DeclareSymbol{nvardownwvearrow}{narrows}{\mathrel}
1595 \mdsy@DeclareAlias{ndownrsquigarrow}{narrows}{\mathrel}

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1596 \mdsy@DeclareSymbol{nlefttrightwavyarrow}{narrows}{\mathrel}
1597 \mdsy@DeclareAlias{nlefttrightsquigarrow}{narrows}{\mathrel}
1598 \mdsy@DeclareSymbol{nupdownwavyarrow}{narrows}{\mathrel}
1599 \mdsy@DeclareAlias{nupdownsquigarrow}{narrows}{\mathrel}
1600 \mdsy@DeclareSymbol{nvarlefttrightwavyarrow}{narrows}{\mathrel}
1601 \mdsy@DeclareAlias{nrightleftsquigarrow}{narrows}{\mathrel}
1602 \mdsy@DeclareSymbol{nvarupdownwavyarrow}{narrows}{\mathrel}
1603 \mdsy@DeclareAlias{ndownupsquigarrow}{narrows}{\mathrel}
1604 \mdsy@DeclareSymbol{ncwoverarcarrow}{narrows}{\mathrel}
1605 \mdsy@DeclareAlias{ncurvearrowright}{narrows}{\mathrel}
1606 \mdsy@DeclareAlias{nrightlcurvearrow}{narrows}{\mathrel}
1607 \mdsy@DeclareSymbol{ncwleftarcarrow}{narrows}{\mathrel}
1608 \mdsy@DeclareAlias{nuplcurvearrow}{narrows}{\mathrel}
1609 \mdsy@DeclareSymbol{ncwunderarcarrow}{narrows}{\mathrel}
1610 \mdsy@DeclareAlias{nleftlcurvearrow}{narrows}{\mathrel}
1611 \mdsy@DeclareSymbol{ncwrightarcarrow}{narrows}{\mathrel}
1612 \mdsy@DeclareAlias{ndownlcurvearrow}{narrows}{\mathrel}
1613 \mdsy@DeclareSymbol{ncwnwarcarrow}{narrows}{\mathrel}
1614 \mdsy@DeclareAlias{nrightupcurvedarrow}{narrows}{\mathrel}
1615 \mdsy@DeclareAlias{nnelcurvearrow}{narrows}{\mathrel}
1616 \mdsy@DeclareSymbol{ncwswarcarrow}{narrows}{\mathrel}
1617 \mdsy@DeclareAlias{nupleftcurvedarrow}{narrows}{\mathrel}
1618 \mdsy@DeclareAlias{nnwlcurvearrow}{narrows}{\mathrel}
1619 \mdsy@DeclareSymbol{ncwsearcarrow}{narrows}{\mathrel}
1620 \mdsy@DeclareAlias{nleftdowncurvedarrow}{narrows}{\mathrel}
1621 \mdsy@DeclareAlias{nswlcurvearrow}{narrows}{\mathrel}
1622 \mdsy@DeclareSymbol{ncwnearcarrow}{narrows}{\mathrel}
1623 \mdsy@DeclareAlias{ndownrightcurvedarrow}{narrows}{\mathrel}
1624 \mdsy@DeclareAlias{nsecurvearrow}{narrows}{\mathrel}
1625 \mdsy@DeclareSymbol{nacwunderarcarrow}{narrows}{\mathrel}
1626 \mdsy@DeclareAlias{nrightrcurvearrow}{narrows}{\mathrel}
1627 \mdsy@DeclareSymbol{nacwrightarcarrow}{narrows}{\mathrel}
1628 \mdsy@DeclareAlias{nuprcurvearrow}{narrows}{\mathrel}
1629 \mdsy@DeclareSymbol{nacwoverarcarrow}{narrows}{\mathrel}
1630 \mdsy@DeclareAlias{ncurvearrowleft}{narrows}{\mathrel}
1631 \mdsy@DeclareAlias{nleftrcurvearrow}{narrows}{\mathrel}
1632 \mdsy@DeclareSymbol{nacwleftarcarrow}{narrows}{\mathrel}
1633 \mdsy@DeclareAlias{ndownnrcurvearrow}{narrows}{\mathrel}
1634 \mdsy@DeclareSymbol{nacwsearcarrow}{narrows}{\mathrel}
1635 \mdsy@DeclareAlias{nuprightcurvearrow}{narrows}{\mathrel}
1636 \mdsy@DeclareAlias{nnercurvearrow}{narrows}{\mathrel}
1637 \mdsy@DeclareSymbol{nacwnearcarrow}{narrows}{\mathrel}
1638 \mdsy@DeclareAlias{nleftupcurvedarrow}{narrows}{\mathrel}
1639 \mdsy@DeclareAlias{nnwrcurvearrow}{narrows}{\mathrel}
1640 \mdsy@DeclareSymbol{nacwnwarcarrow}{narrows}{\mathrel}

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1641 \mdsy@DeclareAlias{ndownleftcurvedarrow}{narrows}{\mathrel}
1642 \mdsy@DeclareAlias{nswrcurvearrow}{narrows}{\mathrel}
1643 \mdsy@DeclareSymbol{nacwswarcarrow}{narrows}{\mathrel}
1644 \mdsy@DeclareAlias{nrightdowncurvedarrow}{narrows}{\mathrel}
1645 \mdsy@DeclareAlias{nsercurvearrow}{narrows}{\mathrel}
1646 \mdsy@DeclareSymbol{nbdoverarcarrow}{narrows}{\mathrel}
1647 \mdsy@DeclareAlias{nleftrightcurvearrow}{narrows}{\mathrel}
1648 \mdsy@DeclareSymbol{nbdleftarccarrow}{narrows}{\mathrel}
1649 \mdsy@DeclareAlias{nupdowncurvearrow}{narrows}{\mathrel}
1650 \mdsy@DeclareSymbol{nbdunderarcarrow}{narrows}{\mathrel}
1651 \mdsy@DeclareAlias{nrightleftcurvearrow}{narrows}{\mathrel}
1652 \mdsy@DeclareSymbol{nbdrightarccarrow}{narrows}{\mathrel}
1653 \mdsy@DeclareAlias{ndownupcurvearrow}{narrows}{\mathrel}
1654 \mdsy@DeclareSymbol{nbdnwarccarrow}{narrows}{\mathrel}
1655 \mdsy@DeclareAlias{nneswcurvearrow}{narrows}{\mathrel}
1656 \mdsy@DeclareSymbol{nbdswarcarrow}{narrows}{\mathrel}
1657 \mdsy@DeclareAlias{nnwsecurvearrow}{narrows}{\mathrel}
1658 \mdsy@DeclareSymbol{nbdsearccarrow}{narrows}{\mathrel}
1659 \mdsy@DeclareAlias{nswnecurvearrow}{narrows}{\mathrel}
1660 \mdsy@DeclareSymbol{nbdnearccarrow}{narrows}{\mathrel}
1661 \mdsy@DeclareAlias{nsenwcurvearrow}{narrows}{\mathrel}
1662 \mdsy@DeclareSymbol{nleftfootline}{narrows}{\mathrel}
1663 \mdsy@DeclareSymbol{nrightfootline}{narrows}{\mathrel}
1664 \mdsy@DeclareSymbol{nacwcirclearrowup}{narrows}{\mathrel}
1665 \mdsy@DeclareSymbol{nacwcirclearrowleft}{narrows}{\mathrel}
1666 \mdsy@DeclareAlias{ncirclearrowleft}{narrows}{\mathrel}
1667 \mdsy@DeclareAlias{nacwopencirclearrow}{narrows}{\mathrel}
1668 \mdsy@DeclareSymbol{nacwcirclearrowdown}{narrows}{\mathrel}
1669 \mdsy@DeclareAlias{nacwgapcirclearrow}{narrows}{\mathrel}
1670 \mdsy@DeclareSymbol{nacwcirclearrowright}{narrows}{\mathrel}
1671 \mdsy@DeclareSymbol{ncwcirclearrowdown}{narrows}{\mathrel}
1672 \mdsy@DeclareAlias{ncwgapcirclearrow}{narrows}{\mathrel}
1673 \mdsy@DeclareSymbol{ncwcirclearrowright}{narrows}{\mathrel}
1674 \mdsy@DeclareAlias{ncirclearrowright}{narrows}{\mathrel}
1675 \mdsy@DeclareAlias{ncwopencirclearrow}{narrows}{\mathrel}
1676 \mdsy@DeclareSymbol{ncwcirclearrowup}{narrows}{\mathrel}
1677 \mdsy@DeclareSymbol{ncwcirclearrowleft}{narrows}{\mathrel}
1678 \mdsy@DeclareSymbol{nRrightarrow}{narrows}{\mathrel}
1679 \mdsy@DeclareSymbol{nUparrow}{narrows}{\mathrel}
1680 \mdsy@DeclareSymbol{nLleftarrow}{narrows}{\mathrel}
1681 \mdsy@DeclareSymbol{nDdownarrow}{narrows}{\mathrel}
1682 \mdsy@DeclareSymbol{nlongrightarrow}{narrows}{\mathrel}
1683 \mdsy@DeclareSymbol{nlongleftarrow}{narrows}{\mathrel}
1684 \mdsy@DeclareSymbol{nLongrightarrow}{narrows}{\mathrel}
1685 \mdsy@DeclareSymbol{nLongleftarrow}{narrows}{\mathrel}

```

```

1686 \mdsy@DeclareSymbol{nlongleftrightharpoon}{narrows}{\mathrel}
1687 \mdsy@DeclareSymbol{nLongleftrightharpoon}{narrows}{\mathrel}
1688 \mdsy@DeclareSymbol{nlongmapsto}{narrows}{\mathrel}
1689 \mdsy@DeclareSymbol{nlongmapsfrom}{narrows}{\mathrel}
1690 \mdsy@DeclareSymbol{nLongmapsto}{narrows}{\mathrel}
1691 \mdsy@DeclareSymbol{nLongmapsfrom}{narrows}{\mathrel}
1692 \mdsy@DeclareSymbol{nlongrightwavearrow}{narrows}{\mathrel}
1693 \mdsy@DeclareAlias{nlongleadsto}{narrows}{\mathrel}
1694 \mdsy@DeclareAlias{nlongrightsquigarrow}{narrows}{\mathrel}
1695 \mdsy@DeclareSymbol{nlongleftwavearrow}{narrows}{\mathrel}
1696 \mdsy@DeclareAlias{nlongleftsquigarrow}{narrows}{\mathrel}
1697 \mdsy@DeclareSymbol{nlongleftfootline}{narrows}{\mathrel}
1698 \mdsy@DeclareAlias{nvlongdash}{narrows}{\mathrel}
1699 \mdsy@DeclareSymbol{nlongrightfootline}{narrows}{\mathrel}
1700 \mdsy@DeclareAlias{nlongdashv}{narrows}{\mathrel}
1701 \mdsy@setslot{224}
1702 \mdsy@DeclareSymbol{nrightvdash}{narrows}{\mathrel}
1703 \mdsy@DeclareAlias{nvDash}{narrows}{\mathrel}
1704 \mdsy@DeclareSymbol{nupvdash}{narrows}{\mathrel}
1705 \mdsy@DeclareAlias{nperp}{narrows}{\mathrel}
1706 \mdsy@DeclareSymbol{nleftvdash}{narrows}{\mathrel}
1707 \mdsy@DeclareAlias{ndashv}{narrows}{\mathrel}
1708 \mdsy@DeclareSymbol{ndownvdash}{narrows}{\mathrel}
1709 \mdsy@DeclareSymbol{nrightassert}{narrows}{\mathrel}
1710 \mdsy@DeclareAlias{nassert}{narrows}{\mathrel}
1711 \mdsy@DeclareAlias{nshorttright tack}{narrows}{\mathrel}
1712 \mdsy@DeclareSymbol{nupassert}{narrows}{\mathrel}
1713 \mdsy@DeclareAlias{nshortuptack}{narrows}{\mathrel}
1714 \mdsy@DeclareSymbol{nleftassert}{narrows}{\mathrel}
1715 \mdsy@DeclareAlias{nshortlefttack}{narrows}{\mathrel}
1716 \mdsy@DeclareSymbol{ndownassert}{narrows}{\mathrel}
1717 \mdsy@DeclareAlias{nshortdowntack}{narrows}{\mathrel}
1718 \mdsy@DeclareSymbol{nrightvDash}{narrows}{\mathrel}
1719 \mdsy@DeclareAlias{nvDash}{narrows}{\mathrel}
1720 \mdsy@DeclareSymbol{nupvDash}{narrows}{\mathrel}
1721 \mdsy@DeclareAlias{nVbar}{narrows}{\mathrel}
1722 \mdsy@DeclareSymbol{nleftvDash}{narrows}{\mathrel}
1723 \mdsy@DeclareAlias{nDashv}{narrows}{\mathrel}
1724 \mdsy@DeclareSymbol{ndownvDash}{narrows}{\mathrel}
1725 \mdsy@DeclareAlias{nbarV}{narrows}{\mathrel}
1726 \mdsy@DeclareSymbol{nrightmodels}{narrows}{\mathrel}
1727 \mdsy@DeclareAlias{nmodels}{narrows}{\mathrel}
1728 \mdsy@DeclareSymbol{nupmodels}{narrows}{\mathrel}
1729 \mdsy@DeclareSymbol{nleftmodels}{narrows}{\mathrel}
1730 \mdsy@DeclareSymbol{ndownmodels}{narrows}{\mathrel}

```

```

1731 \mdsy@DeclareSymbol{nrightVdash}{narrows}{\mathrel}
1732 \mdsy@DeclareAlias{nVdash}{narrows}{\mathrel}
1733 \mdsy@DeclareSymbol{nupVdash}{narrows}{\mathrel}
1734 \mdsy@DeclareSymbol{nleftVdash}{narrows}{\mathrel}
1735 \mdsy@DeclareAlias{ndashV}{narrows}{\mathrel}
1736 \mdsy@DeclareSymbol{ndownVdash}{narrows}{\mathrel}
1737 \mdsy@DeclareSymbol{nrightAssert}{narrows}{\mathrel}
1738 \mdsy@DeclareAlias{nAssert}{narrows}{\mathrel}
1739 \mdsy@DeclareSymbol{nupAssert}{narrows}{\mathrel}
1740 \mdsy@DeclareAlias{nvBar}{narrows}{\mathrel}
1741 \mdsy@DeclareSymbol{nleftAssert}{narrows}{\mathrel}
1742 \mdsy@DeclareSymbol{ndownAssert}{narrows}{\mathrel}
1743 \mdsy@DeclareAlias{nBarv}{narrows}{\mathrel}
1744 \mdsy@DeclareSymbol{nrightVDash}{narrows}{\mathrel}
1745 \mdsy@DeclareAlias{nVDash}{narrows}{\mathrel}
1746 \mdsy@DeclareSymbol{nupVDash}{narrows}{\mathrel}
1747 \mdsy@DeclareSymbol{nleftVDash}{narrows}{\mathrel}
1748 \mdsy@DeclareAlias{nDashV}{narrows}{\mathrel}
1749 \mdsy@DeclareSymbol{ndownVDash}{narrows}{\mathrel}
1750 \mdsy@DeclareSymbol{nVvdash}{narrows}{\mathrel}
1751 \mdsy@DeclareSymbol{ndashVv}{narrows}{\mathrel}
1752 \mdsy@DeclareSymbol{nvDdash}{narrows}{\mathrel}
1753 \mdsy@DeclareSymbol{nDdashv}{narrows}{\mathrel}

```

#### MdSymbolE: large operators

```

1754 \mdsy@setslot{0}
1755 \mdsy@DeclareSymbol{tbigplus}{largesymbols}{\mathop}
1756 \mdsy@DeclareSymbol{dbigplus}{largesymbols}{\mathop}
1757 \mdsy@DeclareSymbol{tbigtimes}{largesymbols}{\mathop}
1758 \mdsy@DeclareSymbol{dbigtimes}{largesymbols}{\mathop}
1759 \mdsy@DeclareSymbol{tbigwedge}{largesymbols}{\mathop}
1760 \mdsy@DeclareSymbol{dbigwedge}{largesymbols}{\mathop}
1761 \mdsy@DeclareSymbol{tbigvee}{largesymbols}{\mathop}
1762 \mdsy@DeclareSymbol{dbigvee}{largesymbols}{\mathop}
1763 \mdsy@DeclareSymbol{tbigwedgedot}{largesymbols}{\mathop}
1764 \mdsy@DeclareSymbol{dbigwedgedot}{largesymbols}{\mathop}
1765 \mdsy@DeclareSymbol{tbigveedot}{largesymbols}{\mathop}
1766 \mdsy@DeclareSymbol{dbigveedot}{largesymbols}{\mathop}
1767 \mdsy@DeclareSymbol{tbigdoublewedge}{largesymbols}{\mathop}
1768 \mdsy@DeclareAlias{tconjquant}{largesymbols}{\mathop}
1769 \mdsy@DeclareSymbol{dbigdoublewedge}{largesymbols}{\mathop}
1770 \mdsy@DeclareAlias{dconjquant}{largesymbols}{\mathop}
1771 \mdsy@DeclareSymbol{tbigdoublevee}{largesymbols}{\mathop}
1772 \mdsy@DeclareAlias{tdisjquant}{largesymbols}{\mathop}
1773 \mdsy@DeclareSymbol{dbigdoublevee}{largesymbols}{\mathop}
1774 \mdsy@DeclareAlias{ddisjquant}{largesymbols}{\mathop}

```

```

1775 \mdsy@DeclareSymbol{tbigcurlywedge}{largesymbols}{\mathop}
1776 \mdsy@DeclareSymbol{dbigcurlywedge}{largesymbols}{\mathop}
1777 \mdsy@DeclareSymbol{tbigcurlyvee}{largesymbols}{\mathop}
1778 \mdsy@DeclareSymbol{dbigcurlyvee}{largesymbols}{\mathop}
1779 \mdsy@DeclareSymbol{tbigcap}{largesymbols}{\mathop}
1780 \mdsy@DeclareSymbol{dbigcap}{largesymbols}{\mathop}
1781 \mdsy@DeclareSymbol{tbigcup}{largesymbols}{\mathop}
1782 \mdsy@DeclareSymbol{dbigcup}{largesymbols}{\mathop}
1783 \mdsy@DeclareSymbol{tbigcapdot}{largesymbols}{\mathop}
1784 \mdsy@DeclareSymbol{dbigcapdot}{largesymbols}{\mathop}
1785 \mdsy@DeclareSymbol{tbigcupdot}{largesymbols}{\mathop}
1786 \mdsy@DeclareSymbol{dbigcupdot}{largesymbols}{\mathop}
1787 \mdsy@DeclareSymbol{tbigcapplus}{largesymbols}{\mathop}
1788 \mdsy@DeclareSymbol{dbigcapplus}{largesymbols}{\mathop}
1789 \mdsy@DeclareSymbol{tbigcupplus}{largesymbols}{\mathop}
1790 \mdsy@DeclareAlias{tbiguplus}{largesymbols}{\mathop}
1791 \mdsy@DeclareSymbol{dbigcupplus}{largesymbols}{\mathop}
1792 \mdsy@DeclareAlias{dbiguplus}{largesymbols}{\mathop}
1793 \mdsy@DeclareSymbol{tbigsqcap}{largesymbols}{\mathop}
1794 \mdsy@DeclareSymbol{dbigsqcap}{largesymbols}{\mathop}
1795 \mdsy@DeclareSymbol{tbigsqcup}{largesymbols}{\mathop}
1796 \mdsy@DeclareSymbol{dbigsqcup}{largesymbols}{\mathop}
1797 \mdsy@DeclareSymbol{tbigsqcapdot}{largesymbols}{\mathop}
1798 \mdsy@DeclareSymbol{dbigsqcapdot}{largesymbols}{\mathop}
1799 \mdsy@DeclareSymbol{tbigsqcupdot}{largesymbols}{\mathop}
1800 \mdsy@DeclareSymbol{dbigsqcupdot}{largesymbols}{\mathop}
1801 \mdsy@DeclareSymbol{tbigsqcapplus}{largesymbols}{\mathop}
1802 \mdsy@DeclareSymbol{dbigsqcapplus}{largesymbols}{\mathop}
1803 \mdsy@DeclareSymbol{tbigsqcupplus}{largesymbols}{\mathop}
1804 \mdsy@DeclareSymbol{dbigsqcupplus}{largesymbols}{\mathop}
1805 \mdsy@DeclareSymbol{tbigoplus}{largesymbols}{\mathop}
1806 \mdsy@DeclareSymbol{dbigoplus}{largesymbols}{\mathop}
1807 \mdsy@DeclareSymbol{tbigotimes}{largesymbols}{\mathop}
1808 \mdsy@DeclareSymbol{dbigotimes}{largesymbols}{\mathop}
1809 \mdsy@DeclareSymbol{tbigodot}{largesymbols}{\mathop}
1810 \mdsy@DeclareSymbol{dbigodot}{largesymbols}{\mathop}
1811 \mdsy@DeclareSymbol{tbigooast}{largesymbols}{\mathop}
1812 \mdsy@DeclareSymbol{dbigoast}{largesymbols}{\mathop}
1813 \mdsy@DeclareSymbol{tprod}{largesymbols}{\mathop}
1814 \mdsy@DeclareSymbol{dprod}{largesymbols}{\mathop}
1815 \mdsy@DeclareSymbol{tcoproduct}{largesymbols}{\mathop}
1816 \mdsy@DeclareSymbol{dcoproduct}{largesymbols}{\mathop}
1817 \mdsy@DeclareSymbol{tsum}{largesymbols}{\mathop}
1818 \mdsy@DeclareSymbol{dsun}{largesymbols}{\mathop}
1819 \mdsy@DeclareSymbol{tosun}{largesymbols}{\mathop}

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1820 \mdsy@DeclareAlias{tmodtwosum}{largesymbols}{\mathop}
1821 \mdsy@DeclareSymbol{dosum}{largesymbols}{\mathop}
1822 \mdsy@DeclareAlias{dmodtwosum}{largesymbols}{\mathop}
1823 \mdsy@DeclareSymbol{tint}{largesymbols}{\mathop}
1824 \mdsy@DeclareSymbol{dint}{largesymbols}{\mathop}
1825 \mdsy@DeclareSymbol{tiint}{largesymbols}{\mathop}
1826 \mdsy@DeclareSymbol{diint}{largesymbols}{\mathop}
1827 \mdsy@DeclareSymbol{tiiint}{largesymbols}{\mathop}
1828 \mdsy@DeclareSymbol{diiint}{largesymbols}{\mathop}
1829 \mdsy@DeclareSymbol{tiiiint}{largesymbols}{\mathop}
1830 \mdsy@DeclareSymbol{diiiint}{largesymbols}{\mathop}
1831 \mdsy@DeclareSymbol{tidotsint}{largesymbols}{\mathop}
1832 \mdsy@DeclareAlias{tdotsint}{largesymbols}{\mathop}
1833 \mdsy@DeclareSymbol{didotsint}{largesymbols}{\mathop}
1834 \mdsy@DeclareAlias{ddotsint}{largesymbols}{\mathop}
1835 \mdsy@DeclareSymbol{tlandupint}{largesymbols}{\mathop}
1836 \mdsy@DeclareAlias{tintclockwise}{largesymbols}{\mathop}
1837 \mdsy@DeclareSymbol{dlandupint}{largesymbols}{\mathop}
1838 \mdsy@DeclareAlias{dintclockwise}{largesymbols}{\mathop}
1839 \mdsy@DeclareSymbol{tlanddownint}{largesymbols}{\mathop}
1840 \mdsy@DeclareAlias{tawint}{largesymbols}{\mathop}
1841 \mdsy@DeclareAlias{tintctrcclockwise}{largesymbols}{\mathop}
1842 \mdsy@DeclareSymbol{dlanddownint}{largesymbols}{\mathop}
1843 \mdsy@DeclareAlias{dawint}{largesymbols}{\mathop}
1844 \mdsy@DeclareAlias{dintctrcclockwise}{largesymbols}{\mathop}
1845 \mdsy@DeclareSymbol{tintbar}{largesymbols}{\mathop}
1846 \mdsy@DeclareSymbol{dintbar}{largesymbols}{\mathop}
1847 \mdsy@DeclareSymbol{tintBar}{largesymbols}{\mathop}
1848 \mdsy@DeclareSymbol{dintBar}{largesymbols}{\mathop}
1849 \mdsy@DeclareSymbol{tfint}{largesymbols}{\mathop}
1850 \mdsy@DeclareSymbol{dfint}{largesymbols}{\mathop}
1851 \mdsy@DeclareSymbol{toint}{largesymbols}{\mathop}
1852 \mdsy@DeclareSymbol{doint}{largesymbols}{\mathop}
1853 \mdsy@DeclareSymbol{toiint}{largesymbols}{\mathop}
1854 \mdsy@DeclareSymbol{doiint}{largesymbols}{\mathop}
1855 \mdsy@DeclareSymbol{toiiint}{largesymbols}{\mathop}
1856 \mdsy@DeclareSymbol{doiiint}{largesymbols}{\mathop}
1857 \mdsy@DeclareSymbol{trcircularrightint}{largesymbols}{\mathop}
1858 \mdsy@DeclareAlias{tointctrcclockwise}{largesymbols}{\mathop}
1859 \mdsy@DeclareSymbol{drcircularrightint}{largesymbols}{\mathop}
1860 \mdsy@DeclareAlias{dointctrcclockwise}{largesymbols}{\mathop}
1861 \mdsy@DeclareSymbol{tlcircularrightint}{largesymbols}{\mathop}
1862 \mdsy@DeclareAlias{tvarointclockwise}{largesymbols}{\mathop}
1863 \mdsy@DeclareSymbol{dlcircularrightint}{largesymbols}{\mathop}
1864 \mdsy@DeclareAlias{dvarointclockwise}{largesymbols}{\mathop}

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1865 \mdsy@DeclareSymbol{trcircleleftint}{\largesymbols}{\mathop}
1866 \mdsy@DeclareAlias{tvarointctrclockwise}{\largesymbols}{\mathop}
1867 \mdsy@DeclareSymbol{drcircleleftint}{\largesymbols}{\mathop}
1868 \mdsy@DeclareAlias{dvarointctrclockwise}{\largesymbols}{\mathop}
1869 \mdsy@DeclareSymbol{tlcircleleftint}{\largesymbols}{\mathop}
1870 \mdsy@DeclareAlias{tointclockwise}{\largesymbols}{\mathop}
1871 \mdsy@DeclareSymbol{dlcircleleftint}{\largesymbols}{\mathop}
1872 \mdsy@DeclareAlias{dointclockwise}{\largesymbols}{\mathop}
1873 \mdsy@DeclareSymbol{tsumint}{\largesymbols}{\mathop}
1874 \mdsy@DeclareSymbol{dsumint}{\largesymbols}{\mathop}
1875 %\let\intop\tint
1876 %\let\ointop\toint
1877
1878 \mdsy@DeclareOperator{bigplus}{\dbigplus}{\tbigplus}
1879 \mdsy@DeclareOperator{bigtimes}{\dbigtimes}{\tbigtimes}
1880 \mdsy@DeclareOperator{bigwedge}{\dbigwedge}{\tbigwedge}
1881 \mdsy@DeclareOperator{bigvee}{\dbigvee}{\tbigvee}
1882 \mdsy@DeclareOperator{bigwedgedot}{\dbigwedgedot}{\tbigwedgedot}
1883 \mdsy@DeclareOperator{bigveedot}{\dbigveedot}{\tbigveedot}
1884 \mdsy@DeclareOperator{bigdoublewedge}{\dbigdoublewedge}{\tbigdoublewedge}
1885 \mdsy@DeclareOperator{conjquant}{\dconjquant}{\tconjquant}
1886 \mdsy@DeclareOperator{bigdoublevee}{\dbigdoublevee}{\tbigdoublevee}
1887 \mdsy@DeclareOperator{disjquant}{\ddisjquant}{\tdisjquant}
1888 \mdsy@DeclareOperator{bigcurlywedge}{\dbigcurlywedge}{\tbigcurlywedge}
1889 \mdsy@DeclareOperator{bigcurlyvee}{\dbigcurlyvee}{\tbigcurlyvee}
1890 \mdsy@DeclareOperator{bigcurlywedgedot}{\dbigcurlywedgedot}{\tbigcurlywedgedot}
1891 \mdsy@DeclareOperator{bigcurlyveedot}{\dbigcurlyveedot}{\tbigcurlyveedot}
1892 \mdsy@DeclareOperator{bigdoublecurlywedge}{\dbigdoublecurlywedge}{\tbigdoublecurlywed}
1893 \mdsy@DeclareOperator{bigdoublecurlyvee}{\dbigdoublecurlyvee}{\tbigdoublecurlyvee}
1894 \mdsy@DeclareOperator{bigcap}{\dbigcap}{\tbigcap}
1895 \mdsy@DeclareOperator{bigcup}{\dbigcup}{\tbigcup}
1896 \mdsy@DeclareOperator{bigcapdot}{\dbigcapdot}{\tbigcapdot}
1897 \mdsy@DeclareOperator{bigcupdot}{\dbigcupdot}{\tbigcupdot}
1898 \mdsy@DeclareOperator{bigcapplus}{\dbigcapplus}{\tbigcapplus}
1899 \mdsy@DeclareOperator{bigcupplus}{\dbigcupplus}{\tbigcupplus}
1900 \mdsy@DeclareOperator{biguplus}{\dbiguplus}{\tbiguplus}
1901 \mdsy@DeclareOperator{bigsqcap}{\dbigsqcap}{\tbigsqcap}
1902 \mdsy@DeclareOperator{bigsqcup}{\dbigsqcup}{\tbigsqcup}
1903 \mdsy@DeclareOperator{bigsqcapdot}{\dbigsqcapdot}{\tbigsqcapdot}
1904 \mdsy@DeclareOperator{bigsqcupdot}{\dbigsqcupdot}{\tbigsqcupdot}
1905 \mdsy@DeclareOperator{bigsqcapplus}{\dbigsqcapplus}{\tbigsqcapplus}
1906 \mdsy@DeclareOperator{bigsqcupplus}{\dbigsqcupplus}{\tbigsqcupplus}
1907 \mdsy@DeclareOperator{bigoplus}{\dbigoplus}{\tbigoplus}
1908 \mdsy@DeclareOperator{bigotimes}{\dbigotimes}{\tbigotimes}
1909 \mdsy@DeclareOperator{bigodot}{\dbigodot}{\tbigodot}

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1910 \mdsy@DeclareOperator{bigoast}{\dbigoast}{\tbigoast}
1911 \mdsy@DeclareOperator{sum}{\dsum}{\tsum}
1912 \mdsy@DeclareOperator{osum}{\dosum}{\tosum}
1913 \mdsy@DeclareOperator{modtwosum}{\dmodtwosum}{\tmodtwosum}
1914 \mdsy@DeclareOperator{prod}{\dprod}{\tprod}
1915 \mdsy@DeclareOperator{coprod}{\dcoprod}{\tcoprod}
1916 \mdsy@DeclareIntegral{int}{\dint}{\tint}
1917 \mdsy@DeclareIntegral{iint}{\diint}{\tiint}
1918 \mdsy@DeclareIntegral{iiint}{\diiint}{\tiiint}
1919 \mdsy@DeclareIntegral{iiiint}{\diiiint}{\tiiiint}
1920 \mdsy@DeclareIntegral{idotsint}{\didotsint}{\tidotsint}
1921 \mdsy@DeclareIntegral{dotsint}{\ddotsint}{\tdotsint}
1922 \mdsy@DeclareIntegral{landupint}{\dlandupint}{\tlandupint}
1923 \mdsy@DeclareIntegral{intclockwise}{\dintclockwise}{\tintclockwise}
1924 \mdsy@DeclareIntegral{landdownint}{\dlanddownint}{\tlanddownint}
1925 \mdsy@DeclareIntegral{awint}{\dawint}{\tawint}
1926 \mdsy@DeclareIntegral{intctrclockwise}{\dintctrclockwise}{\tintctrclockwise}
1927 \mdsy@DeclareIntegral{landdownint}{\dlanddownint}{\tlanddownint}
1928 \mdsy@DeclareIntegral{intbar}{\dintbar}{\tintbar}
1929 \mdsy@DeclareIntegral{intBar}{\dintBar}{\tintBar}
1930 \mdsy@DeclareIntegral{fint}{\dfint}{\tfint}
1931 \mdsy@DeclareIntegral{oint}{\doint}{\toint}
1932 \mdsy@DeclareIntegral{oiint}{\doiint}{\toiint}
1933 \mdsy@DeclareIntegral{oiint}{\doiint}{\toiint}
1934 \mdsy@DeclareIntegral{oiint}{\doiint}{\toiint}
1935 \mdsy@DeclareIntegral{rcircclerightint}{\drcircclerightint}{\trcircclerightint}
1936 \mdsy@DeclareIntegral{ointctrclockwise}{\dointctrclockwise}{\tointctrclockwise}
1937 \mdsy@DeclareIntegral{lcircclerightint}{\dlcircclerightint}{\tlcircclerightint}
1938 \mdsy@DeclareIntegral{varointclockwise}{\dvarointclockwise}{\tvarointclockwise}
1939 \mdsy@DeclareIntegral{rcircleleftint}{\drcircleleftint}{\trcircleleftint}
1940 \mdsy@DeclareIntegral{varointctrclockwise}{\dvarointctrclockwise}{\tvarointctrclockwise}
1941 \mdsy@DeclareIntegral{lcircleleftint}{\dlcircleleftint}{\tlcircleleftint}
1942 \mdsy@DeclareIntegral{ointclockwise}{\dointclockwise}{\tointclockwise}
1943 \mdsy@DeclareIntegral{sumint}{\dsumint}{\tsumint}
1944
1945 \mdsy@renewcommand{intkern@}{\mkern-8.5mu\mathchoice{\mkern-1mu}{\mkern-1mu}{\mkern-1mu}}
1946 \mdsy@renewcommand{intdots@}{\mkern-6mu%
1947   \mathchoice{\@cdots}%
1948   {\{\cdotp\}\mkern0.5mu{\cdotp}\mkern0.5mu{\cdotp}}%
1949   {\{\cdotp\}\cdotp\cdotp}%
1950   {\{\cdotp\}\cdotp\cdotp}}%
1951   \mkern-6mu}

```

Math accents.

```

1952 \mdsy@DeclareMathAccent{widehat}{\mathord}{\largesymbols}{72}
1953 \mdsy@DeclareMathAccent{widetilde}{\mathord}{\largesymbols}{78}

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1954 \mdsy@DeclareMathAccent{wideparen}{\mathord}{\largesymbols}{ "7E}
1955 \mdsy@DeclareMathAccent{vec}{\mathord}{\largesymbols}{ "84}
1956 \mdsy@DeclareMathAccent{middlebar}{\mathord}{\largesymbols}{ "85}
1957 \mdsy@DeclareMathAccent{middleslash}{\mathord}{\largesymbols}{ "86}
1958 \mdsy@DeclareMathAccent{strokethrough}{\mathord}{\largesymbols}{ "87}

```

#### MdSymbolF: delimiters

```

1959 \ifmdsy@largedelims
1960 % \mdsy@DeclareOpen{()}{delimiters}{ "01}
1961 % \mdsy@DeclareClose{)}{delimiters}{ "07}
1962 \mdsy@DeclareOpen{lparen}{delimiters}{ "01}
1963 \mdsy@DeclareClose{rparen}{delimiters}{ "07}
1964 % \mdsy@DeclareOpen{[]}{delimiters}{ "13}
1965 % \mdsy@DeclareClose{[]}{delimiters}{ "19}
1966 \mdsy@DeclareOpen{lbrack}{delimiters}{ "13}
1967 \mdsy@DeclareClose{rbrack}{delimiters}{ "19}
1968 \mdsy@DeclareOpen{lfloor}{delimiters}{ "1F}
1969 \mdsy@DeclareClose{rfloor}{delimiters}{ "25}
1970 \mdsy@DeclareOpen{lceil}{delimiters}{ "2B}
1971 \mdsy@DeclareClose{rceil}{delimiters}{ "31}
1972 \mdsy@DeclareOpen{ulcorner}{delimiters}{ "37}
1973 \mdsy@DeclareClose{urcorner}{delimiters}{ "3D}
1974 \mdsy@DeclareOpen{llcorner}{delimiters}{ "43}
1975 \mdsy@DeclareClose{lrcorner}{delimiters}{ "49}
1976 \mdsy@DeclareOpen{ullcorner}{delimiters}{ "4F}
1977 \mdsy@DeclareClose{ulrcorner}{delimiters}{ "55}
1978 \mdsy@DeclareOpen{lsem}{delimiters}{ "61}
1979 \mdsy@DeclareClose{rsem}{delimiters}{ "67}
1980 \mdsy@DeclareOpen{lBrack}{delimiters}{ "61}
1981 \mdsy@DeclareClose{rBrack}{delimiters}{ "67}
1982 \mdsy@DeclareOpen{lbrace}{delimiters}{ "73}
1983 \mdsy@DeclareClose{rbrace}{delimiters}{ "79}
1984 % \mdsy@DeclareOpen{<}{delimiters}{ "86}
1985 % \mdsy@DeclareClose{>}{delimiters}{ "8C}
1986 \mdsy@DeclareOpen{langle}{delimiters}{ "86}
1987 \mdsy@DeclareClose{rangle}{delimiters}{ "8C}
1988 \mdsy@DeclareOpen{lAngle}{delimiters}{ "92}
1989 \mdsy@DeclareClose{rAngle}{delimiters}{ "98}
1990 \mdsy@DeclareOpen{langledot}{delimiters}{ "9E}
1991 \mdsy@DeclareClose{rangledot}{delimiters}{ "A4}
1992 % \mdsy@DeclareDelimiter{/}{\mathord}{delimiters}{ "AA}
1993 \mdsy@DeclareDelimiter{mathslash}{\mathord}{delimiters}{ "AA}
1994 \mdsy@DeclareMathSymbol{divslash}{\mathbin}{delimiters}{ "AA}
1995 \mdsy@DeclareDelimiter{backslash}{\mathord}{delimiters}{ "B0}
1996 % \expandafter\DeclareMathDelimiter\@backslashchar%
1997 % {\mathord}{delimiters}{ "B0}{delimiters}{ "B0}

```

```

1998 \mdsy@DeclareMathSymbol{setminus}{\mathbin}{delimiters}{B0}
1999 % \mdsy@DeclareDelimiter{|}{\mathord}{delimiters}{B7}
2000 \mdsy@DeclareDelimiter{vert}{\mathord}{delimiters}{B7}
2001 \mdsy@DeclareOpen{lvert}{delimiters}{B7}
2002 \mdsy@DeclareClose{rvert}{delimiters}{B7}
2003 \mdsy@DeclareMathSymbol{mid}{\mathrel}{delimiters}{B7}
2004 \mdsy@DeclareMathSymbol{nmid}{\mathrel}{delimiters}{BA}
2005 \mdsy@DeclareDelimiter{Vert}{\mathord}{delimiters}{BE}
2006 \mdsy@DeclareOpen{lVert}{delimiters}{BE}
2007 \mdsy@DeclareClose{rVert}{delimiters}{BE}
2008 \mdsy@DeclareMathSymbol{parallel}{\mathrel}{delimiters}{BE}
2009 \mdsy@DeclareMathSymbol{nparallel}{\mathrel}{delimiters}{C1}
2010 \mdsy@DeclareDelimiter{Vvert}{\mathord}{delimiters}{C4}
2011 \mdsy@DeclareOpen{lVvert}{delimiters}{C4}
2012 \mdsy@DeclareClose{rVvert}{delimiters}{C4}
2013 \else
2014 % \mdsy@DeclareOpen{(){delimiters}{00}
2015 % \mdsy@DeclareClose{(){delimiters}{06}
2016 \mdsy@DeclareOpen{lparen}{delimiters}{00}
2017 \mdsy@DeclareClose{rparen}{delimiters}{06}
2018 % \mdsy@DeclareOpen{[]}{delimiters}{12}
2019 % \mdsy@DeclareClose{[]}{delimiters}{18}
2020 \mdsy@DeclareOpen{lbrack}{delimiters}{12}
2021 \mdsy@DeclareClose{rbrack}{delimiters}{18}
2022 \mdsy@DeclareOpen{lfloor}{delimiters}{1E}
2023 \mdsy@DeclareClose{rfloor}{delimiters}{24}
2024 \mdsy@DeclareOpen{lceil}{delimiters}{2A}
2025 \mdsy@DeclareClose{rceil}{delimiters}{30}
2026 \mdsy@DeclareOpen{ulcorner}{delimiters}{36}
2027 \mdsy@DeclareClose{urcorner}{delimiters}{3C}
2028 \mdsy@DeclareOpen{llcorner}{delimiters}{42}
2029 \mdsy@DeclareClose{lrcorner}{delimiters}{48}
2030 \mdsy@DeclareOpen{ulcorner}{delimiters}{4E}
2031 \mdsy@DeclareClose{ulrcorner}{delimiters}{54}
2032 \mdsy@DeclareOpen{lsem}{delimiters}{60}
2033 \mdsy@DeclareClose{rsem}{delimiters}{66}
2034 \mdsy@DeclareOpen{lBrack}{delimiters}{60}
2035 \mdsy@DeclareClose{rBrack}{delimiters}{66}
2036 \mdsy@DeclareOpen{lbrace}{delimiters}{72}
2037 \mdsy@DeclareClose{rbrace}{delimiters}{78}
2038 % \mdsy@DeclareOpen{<}{delimiters}{85}
2039 % \mdsy@DeclareClose{>}{delimiters}{8B}
2040 \mdsy@DeclareOpen{langle}{delimiters}{85}
2041 \mdsy@DeclareClose{rangle}{delimiters}{8B}
2042 \mdsy@DeclareOpen{lAngle}{delimiters}{91}

```

```

2043 \mdsy@DeclareClose{rAngle}{delimiters}{ "97}
2044 \mdsy@DeclareOpen{langledot}{delimiters}{ "9D}
2045 \mdsy@DeclareClose{rangledot}{delimiters}{ "A3}
2046 % \mdsy@DeclareDelimiter{/}{\mathord}{delimiters}{ "A9}
2047 \mdsy@DeclareDelimiter{mathslash}{\mathord}{delimiters}{ "A9}
2048 \mdsy@DeclareMathSymbol{divslash}{\mathbin}{delimiters}{ "A9}
2049 \mdsy@DeclareDelimiter{backslash}{\mathord}{delimiters}{ "AF}
2050 % \expandafter\DeclareMathDelimiter\@backslashchar%
2051 % {\mathord}{delimiters}{ "AF}{delimiters}{ "AF}
2052 \mdsy@DeclareMathSymbol{setminus}{\mathbin}{delimiters}{ "AF}
2053 % \mdsy@DeclareDelimiter{|}{\mathord}{delimiters}{ "B6}
2054 \mdsy@DeclareDelimiter{vert}{\mathord}{delimiters}{ "B6}
2055 \mdsy@DeclareOpen{lvert}{delimiters}{ "B6}
2056 \mdsy@DeclareClose{rvert}{delimiters}{ "B6}
2057 \mdsy@DeclareMathSymbol{mid}{\mathrel}{delimiters}{ "B6}
2058 \mdsy@DeclareMathSymbol{nmid}{\mathrel}{delimiters}{ "B9}
2059 \mdsy@DeclareDelimiter{Vert}{\mathord}{delimiters}{ "BD}
2060 \mdsy@DeclareOpen{lVert}{delimiters}{ "BD}
2061 \mdsy@DeclareClose{rVert}{delimiters}{ "BD}
2062 \mdsy@DeclareMathSymbol{parallel}{\mathrel}{delimiters}{ "BD}
2063 \mdsy@DeclareMathSymbol{nparallel}{\mathrel}{delimiters}{ "C0}
2064 \mdsy@DeclareDelimiter{Vvert}{\mathord}{delimiters}{ "C3}
2065 \mdsy@DeclareOpen{lVvert}{delimiters}{ "C3}
2066 \mdsy@DeclareClose{rVvert}{delimiters}{ "C3}
2067 \fi
2068 \let\|\Vert
2069 \mdsy@renewcommand{divides}{\mid}
2070 \mdsy@renewcommand{ndivides}{\nmid}
2071 \mdsy@DeclareMathSymbol{shortmid}{\mathrel}{delimiters}{ "B5}
2072 \mdsy@DeclareMathSymbol{nshortmid}{\mathrel}{delimiters}{ "B8}
2073 \mdsy@DeclareMathSymbol{shortparallel}{\mathrel}{delimiters}{ "BC}
2074 \mdsy@DeclareMathSymbol{nshortparallel}{\mathrel}{delimiters}{ "BF}
2075 \mdsy@DeclareDelimiter{arrowvert}{\mathord}{delimiters}{ "BB}
2076 \mdsy@DeclareDelimiter{Arrowvert}{\mathord}{delimiters}{ "C2}
2077 \mdsy@DeclareClose{lgroup}{delimiters}{ "7E}
2078 \mdsy@DeclareOpen{rgroup}{delimiters}{ "7F}
2079 \mdsy@DeclareClose{rmoustache}{delimiters}{ "80}
2080 \mdsy@DeclareOpen{lmoustache}{delimiters}{ "81}
2081 \mdsy@DeclareDelimiter{bracevert}{\mathord}{delimiters}{ "84}
2082
2083 \mdsy@DeclareMathDelimiter{uparrow}{\mathrel}{arrows}{ "01}{delimiters}{ "C6}
2084 \mdsy@DeclareMathDelimiter{downarrow}{\mathrel}{arrows}{ "03}{delimiters}{ "C7}
2085 \mdsy@DeclareMathDelimiter{updownarrow}{\mathrel}{arrows}{ "11}{delimiters}{ "C8}
2086 \mdsy@DeclareMathDelimiter{Uparrow}{\mathrel}{arrows}{ "09}{delimiters}{ "C9}
2087 \mdsy@DeclareMathDelimiter{Downarrow}{\mathrel}{arrows}{ "0B}{delimiters}{ "CA}

```

```

2088 \mdsy@DeclareMathDelimiter{Updownarrow}{\mathrel}{arrows}{15}{delimiters}{CB}
Horizontal braces.
2089 \mdsy@DeclareMathSymbol{braceld}{\mathord}{delimiters}{CC}
2090 \mdsy@DeclareMathSymbol{bracelu}{\mathord}{delimiters}{CD}
2091 \mdsy@DeclareMathSymbol{bracerd}{\mathord}{delimiters}{CE}
2092 \mdsy@DeclareMathSymbol{braceru}{\mathord}{delimiters}{CF}
2093 \mdsy@DeclareMathSymbol{bracemd}{\mathord}{delimiters}{D0}
2094 \mdsy@DeclareMathSymbol{bracemu}{\mathord}{delimiters}{D1}
2095 \mdsy@DeclareMathSymbol{bracemid}{\mathord}{delimiters}{D2}
2096
2097 \mdsy@DeclareRobustCommandArg{bracefill@}{5}{%
2098   $\m@th#5#1\leaders\hbox{$\#4$}\hfill#2\leaders\hbox{$\#4$}\hfill#3$%
2099 }
2100 \mdsy@renewcommand{downbracefill@}{\bracefill@\braceld\bracemd\bracerd\bracemid}
2101 \mdsy@renewcommand{upbracefill@}{\bracefill@\bracelu\bracemu\braceru\bracemid}
2102 \mdsy@renewcommand{downgroupfill@}{\bracefill@\braceld}{\bracerd\bracemid}
2103 \mdsy@renewcommand{upgroupfill@}{\bracefill@\bracelu}{\braceru\bracemid}
2104 \mdsy@renewcommand{linesegmentfill@}{\arrowfill@\leftfootline\relbar\rightfootline}
2105 \mdsy@renewcommand{leftharpoonfill@}{\arrowfill@\leftharpoondown\relbar\relbar}
2106 \mdsy@renewcommand{rightharpoonfill@}{\arrowfill@\relbar\relbar\rightharpoonup}
2107
2108 \mdsy@DeclareRobustCommandArg{overbrace}{1}{%
2109   \mathop{\mathpalette{\overarrow@\downbracefill@}{#1}}\limits%
2110 }
2111 \mdsy@DeclareRobustCommandArg{underbrace}{1}{%
2112   \mathop{\mathpalette{\underarrow@\upbracefill@}{#1}}\limits%
2113 }
2114 \mdsy@DeclareRobustCommand{overgroup}{\mathpalette{\overarrow@\downgroupfill@}}
2115 \mdsy@DeclareRobustCommand{undergroup}{\mathpalette{\underarrow@\upgroupfill@}}
2116 \mdsy@DeclareRobustCommand{overlinesegment}{\mathpalette{\overarrow@\linesegmentfill@}}
2117 \mdsy@DeclareRobustCommand{overleftharpoon}{\mathpalette{\overarrow@\leftharpoonfill@}}
2118 \mdsy@DeclareRobustCommand{overrightharpoon}{\mathpalette{\overarrow@\rightharpoonfill@}}
2119 \mdsy@DeclareRobustCommand{underlinesegment}{\mathpalette{\underarrow@\linesegmentfill@}}
Radical symbols.
2120 \ifmdsy@largedelims
2121   \mdsy@DeclareMathRadical{sqrtsgn}{delimiters}{D4}{delimiters}{D4}
2122   \mdsy@DeclareMathSymbol{surd}{\mathop}{delimiters}{D4}
2123 \else
2124   \mdsy@DeclareMathRadical{sqrtsgn}{delimiters}{D3}{delimiters}{D3}
2125   \mdsy@DeclareMathSymbol{surd}{\mathop}{delimiters}{D3}
2126 \fi

```

In the  $n$ -th root, we don't want the  $n$  to come too close to the radical (adopted from package lucimatx).

```

2127 \mdsy@DeclareRobustCommandArg{r@t}{2}{\setbox\z@hbox{$\m@th#1\sqrt{#2}$}%

```

```

2128 \dimen@ht\z@ \advance\dimen@-\dp\z@
2129 \mkern5mu\raise.6\dimen@copy\rootbox \mkern-8mu\box\z@

```

Mathchars. If onlysansmath, we make certain single characters active to react on the mathversion.

```

2130 \AtBeginDocument{%
2131 \mdsy@DeclareActiveMathSymbol{+}{\mathbin}{symbols}{11}
2132 \mdsy@DeclareActiveMathSymbol{-}{\mathbin}{symbols}{0E}
2133 \mdsy@DeclareActiveMathSymbol{*}{\mathbin}{symbols}{98}
2134 \mdsy@DeclareActiveMathSymbol{:}{\mathrel}{symbols}{02}
2135 \mdsy@DeclareActiveMathSymbol{=}{\mathrel}{relations}{00}
2136 \mdsy@DeclareActiveMathSymbol{<}{\mathrel}{relations}{24}
2137 \mdsy@DeclareActiveMathSymbol{>}{\mathrel}{relations}{25}
2138 \ifmdsy@largedelims
2139 \mdsy@DeclareActiveMathDelimiter{|}{\mathord}{delimiters}{B7}
2140 \mdsy@DeclareActiveMathDelimiter{(}{\mathopen}{delimiters}{01}
2141 \mdsy@DeclareActiveMathDelimiter{)}{\mathclose}{delimiters}{07}
2142 \mdsy@DeclareActiveMathDelimiter{[}{\mathopen}{delimiters}{13}
2143 \mdsy@DeclareActiveMathDelimiter{]}{\mathclose}{delimiters}{19}
2144 \mdsy@DeclareActiveMathDelimiter{/}{\mathord}{delimiters}{AA}
2145 \else
2146 \mdsy@DeclareActiveMathDelimiter{|}{\mathord}{delimiters}{B6}
2147 \mdsy@DeclareActiveMathDelimiter{(}{\mathopen}{delimiters}{00}
2148 \mdsy@DeclareActiveMathDelimiter{)}{\mathclose}{delimiters}{06}
2149 \mdsy@DeclareActiveMathDelimiter{[}{\mathopen}{delimiters}{12}
2150 \mdsy@DeclareActiveMathDelimiter{]}{\mathclose}{delimiters}{18}
2151 \mdsy@DeclareActiveMathDelimiter{/}{\mathord}{delimiters}{A9}
2152 \fi
2153 \ifmdsy@onlysansmath

```

amsmath and amsopn define commands which use the mathcode of some of the symbols above to define new math characters. Since the mathcode is out of the range (made active), this fails. So change the commands and make the definitions at the begin of the document.

```

2154 \def\resetMathstrut{%
2155 \setbox\z@\hbox{%
2156 \ifmathversionsans{%
2157 \mathchardef\@tempa\csname{@new\endcsname%
2158 }{%
2159 \mathchardef\@tempa\csname{@old\endcsname%
2160 }
2161 \def\@tempb##1"##2##3{\the\textfont"##3\char"}%
2162 \expandafter\@tempb\meaning\@tempa \relax
2163 }%
2164 \ht\Mathstrutbox@ht\z@ \dp\Mathstrutbox@dp\z@
2165 }

```

```

2166 \renewcommand{\std@minus}{-}
2167 \renewcommand{\std@equal}{=}
2168 \gdef\newmcodes@{\mathcode'\ '39\mathcode'\*42\mathcode'\."613A%
2169 \ifnum\mathcode'\-=45 \else
2170 \renewcommand{\std@minus}{-}\relax
2171 \fi
2172 \mathcode'\-45\mathcode'\ /47\mathcode'\:"603A\relax}
2173 \fi
2174 }

```

There is no `\not` symbol in MdSymbol since all relational symbols come with a stroked companion. For compatibility we define a `\not` command that places a virgule over the following symbol.

```

2175 \mdsy@DeclareRobustCommandArg{c@ncel}{2}{\m@th\oalign{${\hfil#1/\hfil$\crrc$#1#2$}}
2176 \mdsy@DeclareRobustCommandArg{not}{1}{\mathrel{\m@th\mathpalette{c@ncel{#1}}}}
2177 \end{style}

```