

# The `stackrel` package

Heiko Oberdiek  
<oberdiek@uni-freiburg.de>

2006/12/02 v1.0

## Abstract

This package adds an optional argument to `\stackrel` for putting something below the relational symbol and defines `\stackbin` for binary symbols.

## Contents

<b>1 User interface</b>	<b>1</b>
<b>2 Implementation</b>	<b>1</b>
<b>3 Installation</b>	<b>2</b>
3.1 Some details for the interested . . . . .	3
<b>4 History</b>	<b>3</b>
[2006/12/02 v1.0] . . . . .	3
<b>5 Index</b>	<b>4</b>

## 1 User interface

L<sup>A</sup>T<sub>E</sub>X's `\stackrel` allows a superscript above a relational symbol, but pure L<sup>A</sup>T<sub>E</sub>X does not provide a macro for putting a subscript below the symbol. This is supported by  $\mathcal{M}$ S<sup>A</sup>T<sub>E</sub>X's `\underset` macro that works on both relational and binary symbols. A combination of `\underset` and `\overset` can be used to put sub- and superscripts to the same symbol.

This package `stackrel` extends the syntax of `\stackrel` by adding an optional argument for the subscript position. It follows the syntax of extensible arrows of packages `amsmath` and `mathtools`.

<code>\stackrel</code> [ <i>subscript</i> ] { <i>superscript</i> } { <i>rel</i> }
<code>\stackbin</code> [ <i>subscript</i> ] { <i>superscript</i> } { <i>bin</i> }

Example:

A `\stackbin[\text{and}]{+} B` `\stackrel[x]{!}{=}` C  
$$A + B \underset{x}{\stackrel{!}{=}} C$$

## 2 Implementation

```
1 \*package
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{stackrel}
4 [2006/12/02 v1.0 Adding subscript option to stackrel (HO)]
```

Given the original definition of `\stackrel` the addition of the optional argument is straightforward. If an argument is empty, then the corresponding sub- or superscript is suppressed.

Depending on the available resources ( $\varepsilon$ -TeX, pdfTeX) three methods are given for testing emptiness. All tests allow the hash to be used inside the arguments without doubling (for the unlikely case that someone wants to define macros with arguments).

```
\stack@relbin
5 \begingroup\expandafter\expandafter\expandafter\endgroup
6 \expandafter\ifx\csname unexpanded\endcsname\relax
7   \newcommand*{\stack@relbin}[3] [] {%
8     \mathop{#3}\limits
9     \toks@{#1}%
10    \edef\reserved@a{\the\toks@}%
11    \ifx\reserved@a\@empty\else_{#1}\fi
12    \toks@{#2}%
13    \edef\reserved@a{\the\toks@}%
14    \ifx\reserved@a\@empty\else^{#2}\fi
15    \egroup
16  }%
17 \else
18   \begingroup\expandafter\expandafter\expandafter\endgroup
19   \expandafter\ifx\csname pdfstrcmp\endcsname\relax
20     \newcommand*{\stack@relbin}[3] [] {%
21       \mathop{#3}\limits
22       \edef\reserved@a{\unexpanded{#1}}%
23       \ifx\reserved@a\@empty\else_{#1}\fi
24       \edef\reserved@a{\unexpanded{#2}}%
25       \ifx\reserved@a\@empty\else^{#2}\fi
26       \egroup
27     }%
28   \else
29     \newcommand*{\stack@relbin}[3] [] {%
30       \mathop{#3}\limits
31       \ifcase\pdfstrcmp{\detokenize{#1}}{\}\else_{#1}\fi
32       \ifcase\pdfstrcmp{\detokenize{#2}}{\}\else^{#2}\fi
33       \egroup
34     }%
35   \fi
36 \fi

\stackrel
37 \renewcommand*{\stackrel}{%
38   \mathrel\bgroup\stack@relbin
39 }

\stackbin
40 \newcommand*{\stackbin}{%
41   \mathbin\bgroup\stack@relbin
42 }

43 \</package>
```

### 3 Installation

CTAN. This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/stackrel.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/stackrel.pdf](#) Documentation.

---

<sup>1</sup>[ftp://ftp.ctan.org/tex-archive/](http://ftp.ctan.org/tex-archive/)

**Unpacking.** The `.dtx` file is a self-extracting `docstrip` archive. The files are extracted by running the `.dtx` through plain- $\text{\TeX}$ :

```
tex stackrel.dtx
```

**TDS.** Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
stackrel.sty → tex/latex/oberdiek/stackrel.sty
stackrel.pdf → doc/latex/oberdiek/stackrel.pdf
stackrel.dtx → source/latex/oberdiek/stackrel.dtx
```

If you have a `docstrip.cfg` that configures and enables `docstrip`'s TDS installing feature, then some files can already be in the right place, see the documentation of `docstrip`.

**Refresh file databases.** If your  $\text{\TeX}$  distribution (`te $\text{\TeX}$` , `mik $\text{\TeX}$` , ...) rely on file databases, you must refresh these. For example, `te $\text{\TeX}$`  users run `texhash` or `mktexlsr`.

### 3.1 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk stackrel.pdf unpack_files output .
```

**Unpacking with  $\text{\LaTeX}$ .** The `.dtx` chooses its action depending on the format:

**plain- $\text{\TeX}$ :** Run `docstrip` and extract the files.

**$\text{\LaTeX}$ :** Generate the documentation.

If you insist on using  $\text{\LaTeX}$  for `docstrip` (really, `docstrip` does not need  $\text{\LaTeX}$ ), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{stackrel.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

**Generating the documentation.** You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by the configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with `pdf $\text{\LaTeX}$` :

```
pdflatex stackrel.dtx
makeindex -s gind.ist stackrel.idx
pdflatex stackrel.dtx
makeindex -s gind.ist stackrel.idx
pdflatex stackrel.dtx
```

## 4 History

[2006/12/02 v1.0]

- First version.

## 5 Index

Numbers written in *italic* refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols		N	
<code>\@empty</code>	11, 14, 23, 25	<code>\NeedsTeXFormat</code>	2
		<code>\newcommand</code>	7, 20, 29, 40
C		P	
<code>\csname</code>	6, 19	<code>\pdfstrcmp</code>	31, 32
		<code>\ProvidesPackage</code>	3
D		R	
<code>\detokenize</code>	31, 32	<code>\renewcommand</code>	37
E		<code>\reserved@a</code>	10, 11, 13, 14, 22, 23, 24, 25
<code>\endcsname</code>	6, 19	S	
I		<code>\stack@relbin</code>	5, 38, 41
<code>\ifcase</code>	31, 32	<code>\stackbin</code>	40
<code>\ifx</code>	6, 11, 14, 19, 23, 25	<code>\stackrel</code>	1, 37
L		T	
<code>\limits</code>	8, 21, 30	<code>\the</code>	10, 13
M		<code>\toks@</code>	9, 10, 12, 13
<code>\mathbin</code>	41	U	
<code>\mathop</code>	8, 21, 30	<code>\unexpanded</code>	22, 24
<code>\mathrel</code>	38		