The `leftidx` package*

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Abstract

This package enables left subscripts and superscripts in math mode. These subscripts and superscripts are automatically raised for better fitting to the symbol they belong to.

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1 Introduction

In mathematical equations, it is sometimes necessary to use indices (subscript or superscript) that are positioned at the left side of a symbol. In tensor mathematics, for instance, some notations use a transponed sign at the left side of the symbol:

$$ {}^{\mathrm{t}}(A_{ij}) \quad = \quad (A_{ji}) $$

For symbols with a normal character height, this can be reached by simply put the indices without an own symbol:

*This file has version 1.03 last revised 2003/09/24.

```
${_1^2}a_3^4$
```
${}_1^2a_3^4$

Is the symbol larger, this leads to unsatisfactory results:

```
${_1^2}\left(\frac{1}{b}\right)_3^4$
```
${}_1^2\left(\frac{1}{b}\right)_3^4$

A better output can be reached by using the package `leftidx.sty`:

```
$\leftidx{_1^2}{\left(\frac{1}{b}\right)}{_3^4}$
```
${}_1^2\left(\frac{1}{b}\right)_3^4$

2 Usage of the package

Two commands are provided by the package.

`\leftidx` The `\leftidx` command has the syntax `\leftidx{`⟨*left indices*⟩`}{`⟨*symbol*⟩`}{`⟨*right indices*⟩`}`. This command typesets the symbol ⟨*symbol*⟩ with indices on the left and on the right side. Example:

```
$\leftidx{_1^2}{\left(\frac{1}{b}\right)}{_3^4}$
```
${}_1^2\left(\frac{1}{b}\right)_3^4$

You may omit left or right indices by using empty arguments.

The next example shows the same in the different mathematical styles:

$$ {}_1^2\left(\frac{1}{b}\right)_3^4 \quad {}_1^2\left(\tfrac{1}{b}\right)_3^4 \quad {}_1^2\left(\tfrac{1}{b}\right)_3^4 \quad {}_1^2\left(\tfrac{1}{b}\right)_3^4 $$

As you can see from the left indices, the horizontal spacing of the left indices is not perfect. You have to adjust them by yourself.

`\ltrans` The `\ltrans{`⟨*symbol*⟩`}` command typesets a small upright "t" as transponed sign on the left side of ⟨*symbol*⟩. Example:

```
$\ltrans{\underline{\underline{J}}}=
\underline{\underline{J}}^{-1}$
```
${}^{\mathrm{t}}\underline{\underline{J}} = \underline{\underline{J}}^{-1}$

3 The implementation

Heading of the package:

```
\NeedsTeXFormat{LaTeX2e}[1995/12/01]
\ProvidesPackage{leftidx}[\filedate\space v\fileversion\space Left indices]
```

`\leftidx` Command for left indices. The braces around the `\vphantom` are necessary to really raise the left indices.

```
\newcommand\leftidx[3]{%
  {\vphantom{#2}}#1#2#3%
}
```

`\ltrans` Left positioned transponed sign.

```
\newcommand{\ltrans}[1]{\leftidx{^\mathrm{t}}{\!#1}{}}
```

Change History

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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.