# 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.


## Contents

1 Introduction 1
2 Usage of the package 2
3 The implementation 2

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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:

$$
{ }^{\mathrm{t}}\left(A_{i j}\right)=\left(A_{j i}\right)
$$

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

[^0]```
\$\{_1~2\}a_3~4\$
\({ }_{1}^{2} a_{3}^{4}\)
```

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:
$\$ \backslash \operatorname{leftidx}\left\{\_1 \sim 2\right\}\{\backslash \operatorname{left}(\backslash$ frac $\{1\}\{b\} \backslash$ right $)\}\left\{\_3^{\wedge} 4\right\} \$ \quad{ }_{1}^{2}\left(\frac{1}{b}\right)_{3}^{4}$

## 2 Usage of the package

Two commands are provided by the package.
\leftidx The \leftidx command has the syntax \leftidx\{〈left indices $\rangle\}\{\langle$ symbol $\rangle\}\{\langle$ right indices $\rangle$ \}. This command typesets the symbol $\langle$ symbol $\rangle$ with indices on the left and on the right side. Example:
\$\leftidx\{_1~2\}\{\left(\frac\{1\}\{b\}\right)\}\{_3^4\}\$ $\left.\quad \begin{array}{l}2 \\ 1\end{array} \frac{1}{b}\right)_{3}^{4}$
You may omit left or right indices by using empty arguments.
The next example shows the same in the different mathematical styles:

$$
{ }_{1}^{2}\left(\frac{1}{b}\right)_{3}^{4} \quad{ }_{1}^{2}\left(\frac{1}{b}\right)_{3}^{4} \quad{ }_{1}^{2}\left(\frac{1}{b}\right)_{3}^{4} \quad{ }_{1}^{2}\left(\frac{1}{b}\right)_{3}^{4}
$$

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 $\{\langle$ symbol $\rangle\}$ command typesets a small upright " t " as transponed sign on the left side of $\langle$ symbol $\rangle$. Example:
\$\Itrans\{\underline\{\underline\{J\}\}\}=
\underline\{\underline\{J\}\}^\{-1\}\$

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

## 3 The implementation

Heading of the package:
1 \NeedsTeXFormat\{LaTeX2e\}[1995/12/01]
$2 \backslash$ ProvidesPackage\{leftidx\}[\filedate\space $v \backslash f i l e v e r s i o n \backslash s p a c e ~ L e f t ~ i n d i c e s] ~$
\leftidx Command for left indices. The braces around the \vphantom are necessary to really raise the left indices.

```
3 \newcommand\leftidx[3] {%
4 {\vphantom{#2}}#1#2#3%
5}
```

\ltrans Left positioned transponed sign. $6 \backslash$ newcommand\{\ltrans $\}[1]\{\backslash \operatorname{leftidx}\{\wedge \backslash m a t h r m\{t\}\}\{\backslash!\# 1\}\}\}$

## Change History

### 1.03 <br> General: Reimplementation with

 dtx format with English docu-```mentation1\leftidx: Implementation simply-fied2
```


## 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 |  | L |  |  | N |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \! | 6 | $\backslash \mathrm{leftidx}$ |  | 2, $\underline{3}, 6$ | $\backslash$ NeedsTeXFormat | 1 |
|  |  | \ltrans |  | 2, $\underline{6}$ | P |  |
| F |  |  |  |  | $\backslash$ ProvidesPackage | 2 |
| $\backslash$ filedate | 2 |  | M |  | V |  |
| $\backslash f i l e v e r s i o n$ | 2 | \mathrm |  | . . 6 | \vphantom | 4 |


[^0]:    *This file has version 1.03 last revised 2003/09/24.

