The **hhtensor** package*

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**Abstract**

This package provides commands for vectors, matrices, and tensors with different styles (arrows as the \TeX default, underlined, and bold).

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1 Load the package

To use this package place

\usepackage\{hhtensor\}

in the preamble of your document. The (style) is arrow, bold, or uline for arrow style, bold symbols, resp. underlined symbols. Default is arrow.

2 Usage

\texttt{vec} Vectors are printed as usual using the \texttt{vec\{symbol\}} command. Depending on the style, they are printed $\vec{\alpha}$, $\alpha$, resp. $\vec{\alpha}$.
\texttt{matr} Matrices are printed using \texttt{matr\{symbol\}}: $\vec{\alpha}$, $\alpha$, resp. $\vec{\alpha}$.
\texttt{tens} Tensors are a little bit different. They take two arguments while the first one

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is the symbol, while the second is the step: $\mathbf{\text{tens}}\langle symbol\rangle \{ step\}$. This leads to $\alpha \sim 4$, $\alpha$, resp. $\alpha \sim 4$.

In the bold style, it is not distinguished between vectors, matrices, and tensors. I would like to use upright symbols but then you cannot use all symbols because there is no full upright bold math alphabet.

The $\mathbf{\text{dcdot}}$ command produces a double dot for double scalar products, e.g.,

$$\vec{\vec{\delta}} = \vec{A} \cdot \vec{\varepsilon}.$$

$\mathbf{\text{trans}}$ produces a transposed sign:

$$\vec{A}^T = \vec{B}.$$

### 3 The implementation

Heading of the package:

1 \NeedsTeXFormat{LaTeX2e}
2 \ProvidesPackage{hhtensor}
3 \[2011/12/29 v0.61 Print vectors and tensors\]

uoush ort underlines with shorter lines than $\underline{\text{underline}}$.

4 \RequirePackage{ushort}

amsmath for bold symbols.

5 \RequirePackage{amsmath}

Booleans to decide which version has to be used.

6 \newif\iftensor@bold
7 \newif\iftensor@uline

Package options that set the booleans.

8 \DeclareOption{bold}{\tensor@boldtrue\tensor@ulinetrue}
9 \DeclareOption{uline}{\tensor@boldfalse\tensor@ulinetrue}
10 \DeclareOption{arrow}{\tensor@boldfalse\tensor@ulinefalse}

Default are arrows, as in standard \LaTeX.

11 \ExecuteOptions{arrow}
12 \ProcessOptions\relax

\origvec Save the original $\vec$ command.

13 \newcommand\origvec{}
14 \let\origvec=\vec

If bold vectors and tensors are requested, execute this code.

15 \iftensor@bold

$\vec$ Redefine the $\vec$ command.

16 \DeclareRobustCommand*$\vec[1]{\text{ensuremath}\{\text{boldsymbol}\{#1\}}}$

\matr Defined the $\matr$ command.

17 \DeclareRobustCommand*$\matr[1]{\text{ensuremath}\{\text{boldsymbol}\{#1\}}}$

\tens Defined the $\tens$ command.

18 \DeclareRobustCommand*$\tens[2]{\text{ensuremath}\{\text{boldsymbol}\{#1\}}$

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\tens Defined the $\tens$ command.

18 \DeclareRobustCommand*$\tens[2]{\text{ensuremath}\{\text{boldsymbol}\{#1\}}$
Underlined vectors?

\else
\iftensor@uline

\vec Vectors underlined.
\DeclareRobustCommand*\vec[1]{\ushort{#1}}

\matr Matrices double underlined.
\DeclareRobustCommand*\matr[1]{\ushortd{#1}}

\tens Tensors with number of step below.
\DeclareRobustCommand*\tens[2]{%
\begingroup
\setlength{\arraycolsep}{0pt}
\begin{array}[t]{c}%
#1 \\
{\scriptstyle \sim} \\
{\scriptscriptstyle #2}\
\end{array}%
\endgroup%
}

Vectors with an arrow. Since this is the default, the \vec command has not to be redefined.
\else
\matr Matrix.
\DeclareRobustCommand*\matr[1]{\ensuremath{\vec{\vec{#1}}}}

\tens Tensors with number of step below. That does not fit well to the arrow styles, but I don’t know a better solution. Does somebody have one?
\DeclareRobustCommand*\tens[2]{%
\begingroup
\setlength{\arraycolsep}{0pt}
\begin{array}[t]{c}%
#1 \\
{\scriptstyle \sim} \\
{\scriptscriptstyle #2}\
\end{array}%
\endgroup%
}

\fi
\fi

\dcdot Double scalar product.
\DeclareRobustCommand*\dcdot{\mathrel{\cdot\mkern 0.0mu \cdot}}%

\trans Transformed sign.
\DeclareRobustCommand*\trans{\~\{\mathrm{T}\}}
Change History

0.6

General: Total new implementation 1

0.61

General: Avoid usage of \\

\fileversion etc. ............ 1

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