Options

In this package there are four categories of options (examples and differences will be shown further)

1. for interval notation
   - *isointerval* for using standardized format of interval described in ISO 31-11
   - *isointerval* for using standardized alternative format of interval described in ISO 31-11
   - *fnspinterval* for using special notation used at FNSPE CTU in Prague

2. for tensor notation (now for vectors and matrices)
   - *isotensor* for using standardized format of tensor
   - *undertensor* for using underline notation of tensor
   - *arrowtensor* for using arrow notation of tensor

3. for complex notation (real and complex part)
   - *isocomplex* for using standardized format of complex and real part
   - *oldcomplex* for using old \LaTeX default format of complex and real part

4. for definition notation
   - *deftext* for definition using *def. over the equal*
   - *defcolon* for definition using the colon with equal

Macros

Interval

Let \( a \) and \( b \) be real numbers.

Closed interval

Using of macro

\[ \ci{a}{b} \]

as closed interval.

- *isointerval*

\[ [a, b] \]
- isoointerval (same as for isointerval) \[a, b\]
- fnspeinterval \((a, b)\)

**Opened interval**
Using of macro \(\oi\{a\}{b}\) as opened interval.
- isoointerval \(]a, b[\)
- isoointerval \((a, b)\)
- fnspeinterval (same as for isoointerval) \((a, b)\)

**Right closed interval**
Using of macro \(\rci\{a\}{b}\) as right closed interval.
- isoointerval \(]a, b[\)
- isoointerval \((a, b)\)
- fnspeinterval \((a, b)\)

**Left closed interval**
Using of macro \(\lei\{a\}{b}\) as left closed interval.
- isoointerval \([a, b]\)
- isoointerval (same as for isointerval) \([a, b]\)
- fnspeinterval \((a, b)\)
Using in text
All these macros can be used directly in text (thanks to the command \texttt{ensuremath}). Therefore one can use this syntax
\begin{verbatim}
Let $x$ be in $a, b$
\end{verbatim}
which casts: Let $x$ be in $[a, b]$.

Tensor
Let $x$ be vector and $A$ be matrix.

Vector
Using of macro \texttt{\vec{x}} as vector.

- \texttt{isotensor} - small letter with italic boldface
  \begin{verbatim}
  x
  \end{verbatim}
- \texttt{undertensor}
  \begin{verbatim}
  \underline{x}
  \end{verbatim}
- \texttt{arrowtensor}
  \begin{verbatim}
  \rightarrow x
  \end{verbatim}

Matrix
Using of macro \texttt{\mat{x}} as matrix.

- \texttt{isotensor} - capital letter with italic boldface
  \begin{verbatim}
  A
  \end{verbatim}
- \texttt{undertensor}
  \begin{verbatim}
  \underline{A}
  \end{verbatim}
- \texttt{arrowtensor}
  \begin{verbatim}
  \rightarrow A
  \end{verbatim}
Using in text

All these macros can be used directly in text (thanks to the command `ensuremath`). Therefore one can use this syntax

\[ \text{Let } \vec{x} \text{ be real.} \]

which casts: Let $\vec{x}$ be real.

Macro for set

Set of natural numbers from 1 to $n$

Using of macro

\[ \text{Set of natural numbers from 1 to } n \]

\[ \text{Using of macro} \]

\[ \text{Set of natural numbers from 0 to } n \]

Using of macro

\[ \text{with zero leads to} \]

\[ \{1, 2, \ldots, n\}. \]

Differentiability class

Just symbol

Using of macro

\[ \text{Just symbol} \]

\[ \text{Using of macro} \]

\[ \text{as } C \text{ class leads to} \]

\[ C. \]

$C$ infinity

Using of macro

\[ \text{C infinity} \]

\[ \text{Using of macro} \]

\[ \text{of infinity leads to} \]

\[ C^\infty. \]

$C$ of order $d$

Using of macro

\[ \text{C of order } d \]

\[ \text{Using of macro} \]

\[ \text{as } C \text{ class of order leads to} \]

\[ C^d. \]
Complex
Let $z \in \mathbb{C}$.

Real part
Using of macro $\Re{z}$ as Real.

- oldcomplex $\Re\{z\}$
- isocomplex Re $z$

Imaginary part
Using of macro $\Im{z}$ as Imaginary.

- oldcomplex $\Im\{z\}$
- isocomplex Im $z$

Using in text
All these macros can be used directly in text (thanks to the command \texttt{ensuremath}). Therefore one can use this syntax
\begin{verbatim}
Let $x$ equal to $\Re{z}$.
\end{verbatim}
which casts: Let $x$ equal to Re $z$.

Subscript
Subscript text with two or more characters should be written in roman style (not italic as default). One can use prefix ! which makes the word after it in roman style. Using of macro $A_{!\text{unique}}$
which leads to $A_{\text{unique}}$
instead of classic $A_{\text{unique}}$
Floor and ceiling functions

Floor function
Macro
\( \lfloor x \rfloor \) as floor function leads to \( \lfloor x \rfloor \)

Ceil function
Macro
\( \lceil x \rceil \) as ceil function leads to \( \lceil x \rceil \)

Definition operator
There are two ways to set a definition operator. First with text and the second with colon.

Text definition
Macro
\( x \def a \)

- deftext
  \( x \def a \)
- defcolon
  \( x:=a \)

Special sets of numbers

Natural number
Macro
\( \text{natur} \) as natural number leads to \( \mathbb{N} \)

Natural number with zero included
Macro
\( \text{nzero} \) as natural number zero leads to \( \mathbb{N}_0 \)
**Integers**
Macro \(\text{\texttt{int}}\)
as integers leads to \(\mathbb{Z}\)

**Rational number**
Macro \(\text{\texttt{rati}}\)
as rational number leads to \(\mathbb{Q}\)

**Real number**
Macro \(\text{\texttt{realm}}\)
as real number leads to \(\mathbb{R}\)

**Complex number**
Macro \(\text{\texttt{compn}}\)
as complex number leads to \(\mathbb{C}\)

**Using in text**
All these macros can be used directly in text (thanks to the command \texttt{ensure-math}). Therefore one can use this syntax

\[
\text{Let } n \text{ be in } \text{\texttt{natum}}
\]

which casts: Let \( n \) be in \( \mathbb{N} \).

**Derivative**
It is derived from \texttt{physics} package. The manual is \texttt{here}.

**Operator**
Partially derived from \texttt{physics} package.
Gradient
Macro
\texttt{\textbackslash grad}
as \texttt{gradient} leads to \texttt{$\nabla$}

Divergence
Macro
\texttt{\textbackslash div}
as \texttt{divergence} leads to \texttt{$\nabla \cdot$}

Derived from \texttt{physics} package, the original meaning of this command as a maths symbol for dividing has alias
\texttt{\textbackslash divisionsymbol}
which cast
\texttt{$\div$}

Rotation
In English literature as \texttt{curl} operator has macro
\texttt{\textbackslash rot}
as \texttt{rotation} and leads to \texttt{$\nabla \times$}

One can also use \texttt{physics} package command
\texttt{\textbackslash curl}

Laplacian
Macro
\texttt{\textbackslash lapl}
as \texttt{laplacian} leads to \texttt{$\Delta$}

One can also use \texttt{physics} package notation
\texttt{$\nabla^2$}

which is cast by macro
\texttt{\textbackslash laplacian}
Degree

Macro
\textdegree

as degree leads to °. Can be used without math mode.

Physics unit

Variable unit

Macro
\textvarunit{m}{kg}

as variable unit leads to

\[ m = \text{kg} \]

This macro can be used directly in text (thanks to the ensure function). Therefore one can use

\textit{where} \textvarunit{m}{kg} \textit{is the mass}.

which casts: where \[ m = \text{kg} \] is the mass.

Unit

Macro
\textunit{m}{kg}

as unit leads to

\[ m \text{ kg} \]

This macro looks as

\textit{m\textnathrm{aunit}{kg}}

the space before the roman characters is very important in science publications.

Expected value

Macro
\textexpv{x}

as expected value leads to

\[ \langle x \rangle \]
Shortcuts

One half
Macro
\hlf
as half leads to \( \frac{1}{2} \)

One over
Macro
\cover{x}
as one over leads to \( \frac{1}{x} \)

Spaces

Horizontal space
Macro
\hbox[width]
as hspace{em} leads to horizontal space of specific width (multiples of em). Special case is 1em
\mathrm{text}\hbox{\mathrm{text}}
which leads to text text
or shortcut form space with 2em width
\mathrm{text}\hbox[2em]{\mathrm{text}}
which casts text text

Implies with em spaces
Macro
\impsm
as implies with em spaces leads to
text \Rightarrow text