Interval brackets, with Ti*k*Z (1.0a)

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Contents

1 Introduction

1.1 Loading

To use `tkz-interval`, simply use:

```
Loading
1 \usepackage{tkz-interval}
```

Used packages are `tikz` and `simplekv`.

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1.2 Idea(s)

The idea behind this package is to provide a command for representing an interval with brackets created using TikZ, with automatic size management and customization of thickness and depth, for examples.

It's also possible to specify around spaces and optional *overlap* for open bracket.

This documentation was created using the `minted-code` package.

1.3 Limitations

Spaces around and inside seems to be fine, but not perfect and not exactly like *normal* version...

1.4 First example(s)

Samples intervals

```
1 \def\IntervtestA{ -4 ; \dfrac{1}{7}        }
2 \def\IntervtestB{ \dfrac{1}{2} ; \sqrt{7} }
```

```
%'normal' version
$x \in \left[ \IntervtestA \right] \cup \left[ \IntervtestB \right[$.\\
$x \in \left] \IntervtestA \right[ \cup \left[ \IntervtestB \right[$.\\
$x \in \left[ \IntervtestA \right[ \cup \left[ \IntervtestB \right[$.\\
$x \in \left] \IntervtestA \right] \cup \left[ \IntervtestB \right[$.\\
```

$x \in \left[-4; \dfrac{1}{7} \right] \cup \left[\dfrac{1}{2}; \sqrt{7} \right[$.

$x \in \left] -4; \dfrac{1}{7} \right[\cup \left[\dfrac{1}{2}; \sqrt{7} \right[$.

$x \in \left[-4; \dfrac{1}{7} \right[\cup \left[\dfrac{1}{2}; \sqrt{7} \right[$.

$x \in \left] -4; \dfrac{1}{7} \right] \cup \left[\dfrac{1}{2}; \sqrt{7} \right[$.

```
%with tkz-interval package
\setKVdefault[tkzinterv]{left color=teal,right color=red}
$x \in \tkzinterval{\IntervtestA} \cup \tkzinterval[open]{\IntervtestB}$.\\
$x \in \tkzinterval[open]{\IntervtestA} \cup \tkzinterval[open]{\IntervtestB}$.\\
$x \in \tkzinterval[open right]{\IntervtestA} \cup \tkzinterval[open]{\IntervtestB}$.\\
$x \in \tkzinterval[open left]{\IntervtestA} \cup \tkzinterval[open]{\IntervtestB}$.
```

$$x \in \left[-4; \frac{1}{7} \right] \cup \left] \frac{1}{2}; \sqrt{7} \right[.$$

$$x \in \left] -4; \frac{1}{7} \right[\cup \left] \frac{1}{2}; \sqrt{7} \right[.$$

$$x \in \left[-4; \frac{1}{7} \right[\cup \left] \frac{1}{2}; \sqrt{7} \right[.$$

$$x \in \left] -4; \frac{1}{7} \right] \cup \left] \frac{1}{2}; \sqrt{7} \right[.$$

1.5 History

`1.0a`: Initial version

2 Usage

2.1 Global lengths, local keys

```
Global lengths
1 \setlength\tkzintervhoriz{length}    %brackets width        (5pt)
2 \setlength\tkzintervwidth{length}    %brackets thickness  (0.7pt)
```

```
Local keys
1 \setKVdefault[tkzinterv]{key1 = new default value,...}
```

2.2 Main macro

```
Macro (english usage)
1 \tkzinterval[type,keys]{lower limit ; upper limit}
2 %type can be open / open left / open right (closed by default)
```

```
Macro (french usage)
1 \tkzintervalle[type,clés]{borne inf ; borne sup}
2 %le type peut-être FF (défaut) / OO / OF / FO
```

2.3 Keys

- vsep: vertical space (in *unit*) between box and brackets   (0.1em)
- overlap: 'overlap 'effect' (lr-l-r-none) for open bracket   (lr)
- overlap factor: overlap factor(s) (lr-l/r) for open brackets   (0.5)
- hsep: horizontal margin, as a percentage of the width of the brackets   (0.75)
- space before: space before interval   (\,)
- space after: space after interval   (\,)
- nobeforeafter: suppress space around interval   (false)

3 Influence of some parameters

3.1 Default values

```
Default values
1 \setlength\tkzintervhoriz{5pt}
2 \setlength\tkzintervwidth{0.7pt}
3 \setKVdefault[tkzinterv]{hsep=0.75}
```

```
Let's consider the interval $I=\tkzinterval[open,overlap=lr]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right[$.

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```
Let's consider the interval $I=\tkzinterval{ \IntervtestA }$.\\
Let's consider the interval $I=\left[ \IntervtestA \right]$.
```

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right]$.

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right]$.

```
{\huge Let's consider the interval $\mathcolor{red}{I=\tkzinterval{\IntervtestA}}$.}
```

Let's consider the interval $\textcolor{red}{I = \left[-4; \dfrac{1}{7} \right]}$.

```
Let's consider the interval $I=\tkzinterval[open left,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open left,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right]$.

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right]$.

```
Let's consider the interval $I=\tkzinterval[open right,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open right,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right[$.

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right[$.

3.2 Custom values (v1)

```
Custom values
1 \setlength\tkzintervhoriz{6pt}
2 \setlength\tkzintervwidth{0.95pt}
3 \setKVdefault[tkzinterv]{hsep=0.5,vsep=1mm}
```

```
Let's consider the interval $I=\tkzinterval[open,overlap=lr]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left]-4;\frac{1}{7}\right[$.

Let's consider the interval $I = \left]-4;\frac{1}{7}\right[$.

Let's consider the interval $I = \left]-4;\frac{1}{7}\right[$.

Let's consider the interval $I = \left]-4;\frac{1}{7}\right[$.

```
Let's consider the interval $I=\tkzinterval{ \IntervtestA }$.\\
Let's consider the interval $I=\left[ \IntervtestA \right]$.
```

Let's consider the interval $I = \left[-4;\frac{1}{7}\right]$.

Let's consider the interval $I = \left[-4;\frac{1}{7}\right]$.

```
{\huge Let's consider the interval $\mathcolor{red}{I=\tkzinterval{\IntervtestA}}$.}
```

Let's consider the interval $I = \left[-4;\frac{1}{7}\right]$.

```
Let's consider the interval $I=\tkzinterval[open left,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open left,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left]-4;\frac{1}{7}\right]$.

Let's consider the interval $I = \left]-4;\frac{1}{7}\right]$.

```
Let's consider the interval $I=\tkzinterval[open right,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open right,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right[$.

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right[$.

3.3 Custom values (v2)

Custom values

```
1  \setlength\tkzintervhoriz{1.75mm}
2  \setlength\tkzintervwidth{0.65mm}
3  \setKVdefault[tkzinterv]{hsep=1,vsep=0.125em}
```

```
Let's consider the interval $I=\tkzinterval[open,overlap=lr]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right[$.

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right[$.

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right[$.

Let's consider the interval $I = \left] -4; \dfrac{1}{7} \right[$.

```
Let's consider the interval $I=\tkzinterval{ \IntervtestA }$.\\
Let's consider the interval $I=\left[ \IntervtestA \right]$.
```

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right]$.

Let's consider the interval $I = \left[-4; \dfrac{1}{7} \right]$.

```
{\huge Let's consider the interval $\mathcolor{red}{I=\tkzinterval{\IntervtestA}}$.}
```

Let's consider the interval $\textcolor{red}{I = \left[-4; \dfrac{1}{7} \right]}$.

```
Let's consider the interval $I=\tkzinterval[open left,overlap=l]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open left,overlap=none]{\IntervtestA}$.
```

Let's consider the interval $I = \left]-4;\dfrac{1}{7}\right]$.

Let's consider the interval $I = \left]-4;\dfrac{1}{7}\right]$.

```
Let's consider the interval $I=\tkzinterval[open right,overlap=r]{\IntervtestA}$.\par
Let's consider the interval $I=\tkzinterval[open right,overlap=none]{\IntervtestA}$.
```

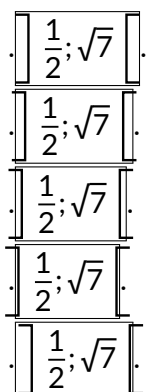Let's consider the interval $I = \left[-4;\dfrac{1}{7}\right[$.

Let's consider the interval $I = \left[-4;\dfrac{1}{7}\right[$.

3.4 Overlap factor

Custom values

```
1 \setlength\tkzintervhoriz{5pt}
2 \setlength\tkzintervwidth{0.9pt}
```

```
\setlength\fboxsep{0.5pt}
.\fbox{$\tkzinterval[open,overlap factor=0.25] {\dfrac{1}{2};\sqrt{7}}$}.\\
.\fbox{$\tkzinterval[open,overlap factor=0.5]  {\dfrac{1}{2};\sqrt{7}}$}.\\
.\fbox{$\tkzinterval[open,overlap factor=0.75] {\dfrac{1}{2};\sqrt{7}}$}.\\
.\fbox{$\tkzinterval[open,overlap factor=1]    {\dfrac{1}{2};\sqrt{7}}$}.\\
.\fbox{$\tkzinterval[open,overlap factor=0/1]  {\dfrac{1}{2};\sqrt{7}}$}.
```

$.\left]\dfrac{1}{2};\sqrt{7}\right[.$

$.\left]\dfrac{1}{2};\sqrt{7}\right[.$

$.\left]\dfrac{1}{2};\sqrt{7}\right[.$

$.\left]\dfrac{1}{2};\sqrt{7}\right[.$

$.\left]\dfrac{1}{2};\sqrt{7}\right[.$

3.5 Samples (v2)

```
1 \setlength\tkzintervhoriz{5pt}
2 \setlength\tkzintervwidth{0.9pt}
3 \setKVdefault[tkzinterv]{hsep=0.75,left color=teal,right color=red}
```

```
\setKVdefault[tkzinterv]{hsep=0.75,left color=teal,right color=red}
$x \in \tkzinterval[]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[open]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[open]{\dfrac{1}{2};\sqrt{7}}$.\hfill\null

\hfill$x \in \tkzinterval[open right]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[open]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open left]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[open]{\dfrac{1}{2};\sqrt{7}}$.
```

$$x \in \left[4; \frac{100}{7}\right] \cup \left]\frac{1}{2}; \sqrt{7}\right[. \qquad x \in \left]4; \frac{100}{7}\right[\cup \left]\frac{1}{2}; \sqrt{7}\right[.$$

$$x \in \left[4; \frac{100}{7}\right[\cup \left]\frac{1}{2}; \sqrt{7}\right[. \qquad x \in \left]4; \frac{100}{7}\right] \cup \left]\frac{1}{2}; \sqrt{7}\right[.$$

```
$x \in \tkzinterval[]{4;\dfrac{100}{7}} \cup \tkzinterval[]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[]{\dfrac{1}{2};\sqrt{7}}$.\hfill\null

\hfill$x \in \tkzinterval[open right]{4;\dfrac{100}{7}} \cup
  ↪ \tkzinterval[]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open left]{4;\dfrac{100}{7}} \cup \tkzinterval[]{\dfrac{1}{2};\sqrt{7}}$.
```

$$x \in \left[4; \frac{100}{7}\right] \cup \left[\frac{1}{2}; \sqrt{7}\right] . \qquad x \in \left]4; \frac{100}{7}\right[\cup \left[\frac{1}{2}; \sqrt{7}\right] .$$

$$x \in \left[4; \frac{100}{7}\right[\cup \left[\frac{1}{2}; \sqrt{7}\right] . \qquad x \in \left]4; \frac{100}{7}\right] \cup \left[\frac{1}{2}; \sqrt{7}\right] .$$

```
$x \in \tkzinterval[]{4;\dfrac{100}{7}} \cup \tkzinterval[open
  ↪ left]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open]{4;\dfrac{100}{7}} \cup \tkzinterval[open
  ↪ left]{\dfrac{1}{2};\sqrt{7}}$.\hfill\null

\hfill$x \in \tkzinterval[open right]{4;\dfrac{100}{7}} \cup \tkzinterval[open
  ↪ left]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open left]{4;\dfrac{100}{7}} \cup \tkzinterval[open
  ↪ left]{\dfrac{1}{2};\sqrt{7}}$.
```

$$x \in \left[4; \frac{100}{7}\right] \cup \left]\frac{1}{2}; \sqrt{7}\right] . \qquad x \in \left]4; \frac{100}{7}\right[\cup \left]\frac{1}{2}; \sqrt{7}\right] .$$

$$x \in \left[4; \frac{100}{7}\right[\cup \left]\frac{1}{2}; \sqrt{7}\right] . \qquad x \in \left]4; \frac{100}{7}\right] \cup \left]\frac{1}{2}; \sqrt{7}\right] .$$

```
$x \in \tkzinterval[]{4;\dfrac{100}{7}} \cup \tkzinterval[open
↪  right]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open]{4;\dfrac{100}{7}} \cup \tkzinterval[open
↪  right]{\dfrac{1}{2};\sqrt{7}}$.\hfill\null

\hfill$x \in \tkzinterval[open right]{4;\dfrac{100}{7}} \cup \tkzinterval[open
↪  right]{\dfrac{1}{2};\sqrt{7}}$.\hfill
$x \in \tkzinterval[open left]{4;\dfrac{100}{7}} \cup \tkzinterval[open
↪  right]{\dfrac{1}{2};\sqrt{7}}$.
```

$x \in \left[4; \dfrac{100}{7} \right] \cup \left[\dfrac{1}{2}; \sqrt{7} \right[.$
$\qquad\qquad\qquad\qquad x \in \left] 4; \dfrac{100}{7} \right[\cup \left[\dfrac{1}{2}; \sqrt{7} \right[.$

$\qquad\qquad x \in \left[4; \dfrac{100}{7} \right[\cup \left[\dfrac{1}{2}; \sqrt{7} \right[.$
$\qquad\qquad\qquad\qquad x \in \left] 4; \dfrac{100}{7} \right] \cup \left[\dfrac{1}{2}; \sqrt{7} \right[.$