Bits and pieces for LaTeX

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January 17, 2020

This package provides a list of randomly assorted but useful bits and pieces for writting my physics papers.

1 Characters, symbols and small stuff

A small collection of special characters and symbol definitions that work in all environments...

`\un{km}`	3.1 km	units set upright, with small space
`\circnumb{3}`	③	a number with a circle around its (works from 0 to 9)
`\degree`	°	degree symbol
`\degC`	$^\circ C$	degree Celsius
`\xfrac{A}{B}`	A/B	fraction set in slanted mode
`\sfrac{A}{B}`	A/B	fraction set in slanted mode, **inline** sized
`\order{10}`	$\mathcal{O}(10)$	order of ...
`\underwiggle{text}`	text	wiggly line under the text (slow!)
`\brabar{\nu}`	$\overline{\nu}$	for particle- and anti-particle

... and some that work only in math mode

`$\dif$`	$\frac{\mathrm{d}N}{\mathrm{d}t}$	full differential set in upright mode, no italic
`$\eps$`	ε	I like this epsilon more...
`$\veps$`	ϵ	... than this one
`$\const$`	const	frequently used, set in upright mode
`$\laplace$`	$\boldsymbol{\Delta}$	in bold-face
`$\bra$ $\ket$`	$\langle\Psi\,\vert\Psi\rangle$	doesn't work with operator inbetween
`$\mean{x}$`	$\langle x\rangle$	used to describe the average

2 Comments

For side-margin comments, use the `\com[color]{text}` command. Default color is `NavyBlue` *, but you can use any color specified in `dvipsnames`. Also, here is some text * with some comment next to it. The same works in

BrickRed also looks good

quite a few comments here

$$f(x) = ax^{2^\star}$$

... or better third power

math mode. Known issue: comments in math mode may clash with other comments. If multiple users work on the same document, it may be quite useful to define your abbreviation for your comments, such as your initials. Use the `\mycomcolor{SB}{MidnightBlue}` to define `SB` as short-hand for your color. For future comments, you can then just use `\com[SB]{...}` to generate a comment in your color [⋆].

Comments by SB

a comment in my color

3 Reactions

The `\decayto[length]` command provides a *"decay"* arrow. The length of the arrow is set in units of `em`, with a default length of `1.5em`.

Examples:

```
  \decayto
\decayto[3]
\decayto[6]
```

To display decay chains, this is best used together with the `alignat` enviroment.

```
\begin{alignat*}{3}
  p + N \to X + \,& \pi^{\pm},K^{\pm}   \\
            & \decayto[2.5] && \mu^{\pm} + \nu_\mu \\
            & && \decayto e^{\pm} + {\nu_e} + \nu_\mu  \\
\end{alignat*}
```

$$\begin{aligned} p + N \to X + \pi^{\pm}, K^{\pm} \\ \hookrightarrow \mu^{\pm} + \nu_\mu \\ \hookrightarrow e^{\pm} + \nu_e + \nu_\mu \end{aligned}$$

4 Figures

Space is sparse and we often want to setup figures in an efficient way. In particular if we have several figures in a row next to each other, it looks nicer if the layout is such that they have all the same height. Here are a few commands that try to make such a figure layout easier.

4.1 One figure

For one figure to be laid out over the full widht of the page, use the `\onefig[pos]{myfig}{caption}` command. The optional `pos` argument tells LaTeX where to put the figure, for which you can give one or more preferences. LaTeX tries to meet these in the order you provide them.

`h`	put figure right here
`t`	put figure at the top of the page
`b`	put figure at the bottom of the page
`p`	put figure on this page
`h!,t!,...`	any of the above with `!`: force figure to be here/top/...

The default for the `\onefig{}` and all other commands in this section is `[tbp]`, so that the figure appears preferenially at the top, then at the bottom, then on the page. The figure width is by default set to `0.9\columnwidth`, i.e. the figure will span 90% of the width of the line. If you want to chanage this **for all figures** you can use

```
\setlength{\figwidth}{<your new figure width>}
```

Example:
Here is the output of this command, which shows the figure across the full column. `h!` assures that the figure appears right here.

```
\onefig[h!]{horizontalfig}{This figure shows a prominent peak in the data}
```

4.2 Two or three figures

If two or more figures are put next to each other, it looks usually best if both figures have the same height. This is achieved by the `\twofig` and `\twofigone` commands. The difference between the two commands is the the first one allows a separate caption for each figure, while the other ones has once caption for both figures. The syntax is as above

```
\twofig[pos]{myfig1}{Caption of Fig. 1}{myfig2}{Caption of Fig. 2}
\twofigone[pos]{myfig1}{myfig2}{The common caption}
```

and similarly for three figures

```
\threefig[pos]
   {myfig1}{Caption of Fig. 1}
   {myfig2}{Caption of Fig. 2}
   {myfig3}{Caption of Fig. 3}
\threefigone[pos]{myfig1}{myfig2}{myfig3}{The common caption}
```

The figures are automatically scaled to have the same height and fill the `figwidth`. In between the figures there is some space, which can be set with

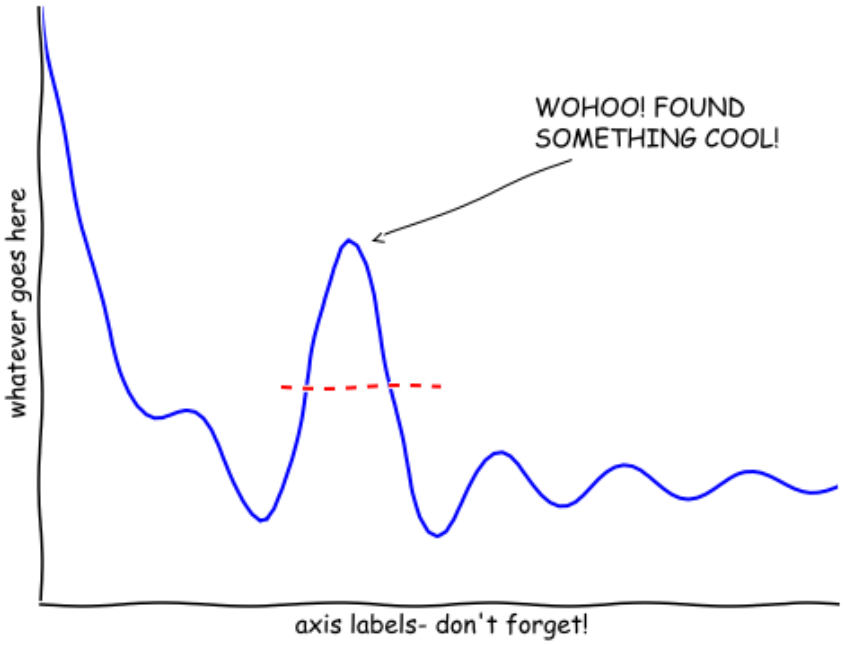

Figure 1: This figure shows a prominent peak in the data

```
\setlength{\figsep}{<your new figure seperation>}
```

Example:

```
\twofig[h!]
   {horizontalfig.png}{Left figure}
   {verticalfig.png}{Right figure}
```

For the example with three figures in a row, we set the `\figsep` so that there is a little more space and the figures become a little larger.

```
\setlength{\figsep}{0pt}
\threefigone[ht!]
  {horizontalfig.png}
  {verticalfig.png}
  {horizontalfig.png}
  {Data (left), results (middle) and same data again (right). Note how
   both  figures are automatically scaled to have the same height.}
\setlength{\figsep}{0.05\columnwidth}
```

4.3 Floating figures

Sometimes it is also nice to have figures surrounded by text. For that we can use the `\textfig` command.

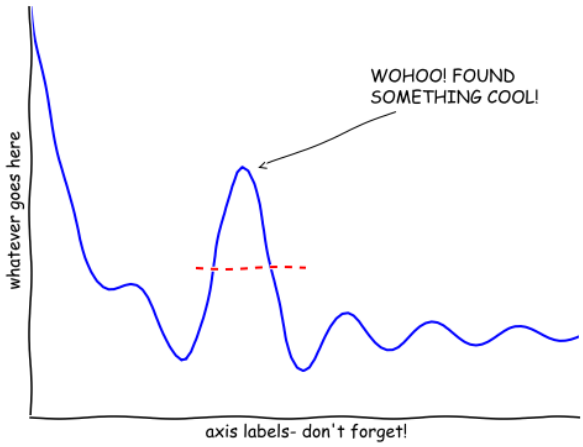

Figure 2: Left figure

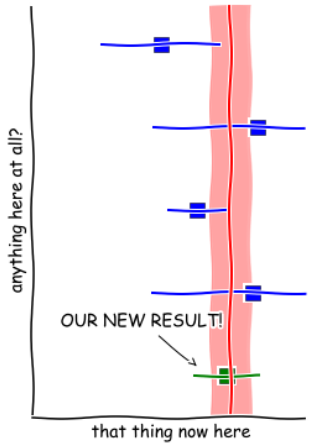

Figure 3: Right figure

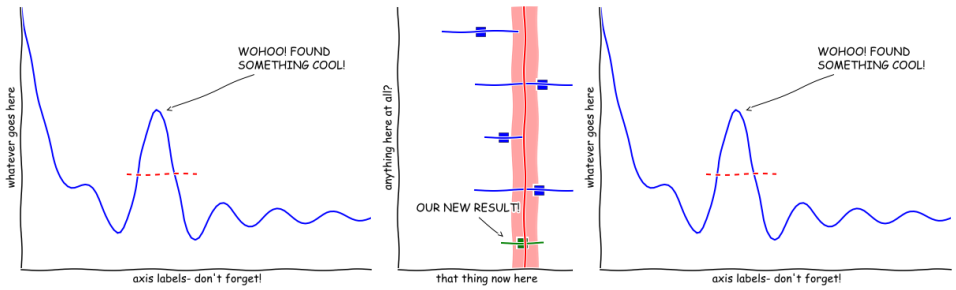

Figure 4: Data (left), results (middle) and same data again (right). Note how both figures are automatically scaled to have the same height.

`\textfig[pos]{width}{myfig}{caption}`

The `width` is given as a fraction of the linewidth. There are also positioning parameters that can be specified

- `r` forces the figure to the right in a paragraph.
- `l` forces the figure to the left in a paragraph.
- `p` right in a paragraph if the pagenumber is odd, and to the left if even.
- `v` use the package option if defined, else same as `p` (**default).**

Note that if the figure colides with the page boundary, it is sometimes not shown at all – use with care (or include a pagebreak just before).

Example:

```
\pagebreak
\textfig[r]{.4}{horizontalfig.png}{Figure surrounded by text}
```

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisis sem. Nullam nec mi et neque pharetra sollicitudin. Praesent imperdiet mi nec ante. Donec ullamcorper, felis non sodales commodo, lectus velit ultrices augue, a dignissim nibh lectus placerat pede. Vivamus nunc nunc, molestie ut, ultricies vel, semper in, velit. Ut porttitor. Praesent in sapien. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Duis fringilla tristique neque. Sed interdum libero ut metus. Pellentesque placerat. Nam rutrum augue a leo. Morbi sed elit sit amet ante lobortis sollicitudin. Praesent blandit blandit mauris. Praesent lectus tellus, aliquet aliquam, luctus a, egestas a, turpis. Mauris lacinia lorem sit amet ipsum. Nunc quis urna dictum turpis accumsan semper.

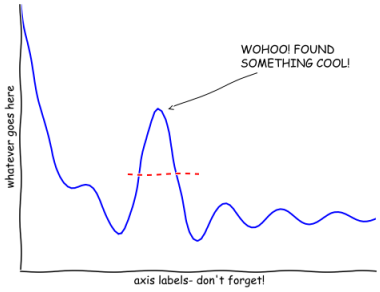

Figure 5: Figure surrounded by text