titlehead

Hochschule Hannover
University of Applied Sciences and Arts
-
Fakultät I
Elektro- und Informationstechnik

Subject

Title

Subtitle

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Professor(in)/Lehrbeauftragte(r): Professor

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Max Mustermann

Mira Musterfrau

Abstract

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Contents

1 Examples

red text and blue text
different subscripts: R_t R_{t}
using Units: $R = 200\,\mathrm{m\Omega} + 345.675 \times 10^{-3}\,\mathrm{V/m} - 5\,\mathrm{s/m^2}$
some information[Phy20]
german number: $3,5$ english number: 3.5

1.1 using images

Images can just be imported and used in a float environment with a caption and a lable to reference it. (see Figure 1.1)

Fig. 1.1: just a random image

You can also display two or more images together, using the `subfigure` package. You can also resize or crop Images, as seen in Figure 1.2(a) and Figure 1.2(b)

(a) a smaller Version (b) a croped image

Fig. 1.2: some more images

Plots can be created directly with latex. It is recommended to do this in subfiles and just import the finished PDF pages. This speed us compilertimes by a lot. You should not change the size of precompiled images to keep fontsizes consistent.

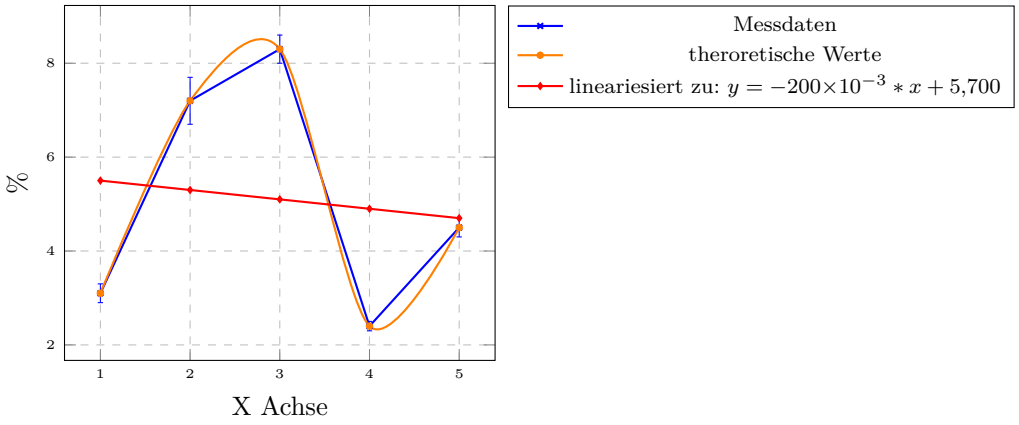

Fig. 1.3: a nice plot

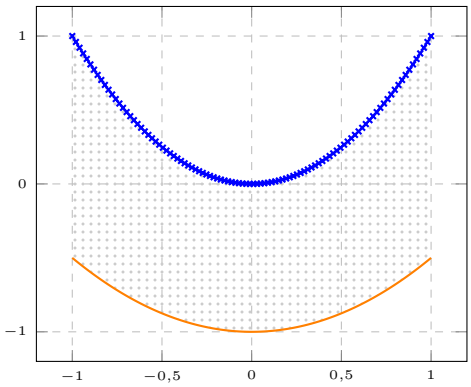

Fig. 1.4: a area plot

Circuit diagramms can also be created using a package called `circuitikz`. It is also recommended to get familiar with Inkscape which has a very good export to latex feature, as you can see in Figure 1.6.

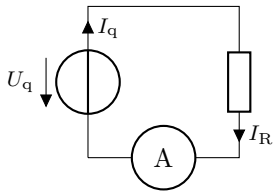

Fig. 1.5: a circuit diagramm

Using Inkscape, you can create SVG-vector graphics and import them easily into Latex.

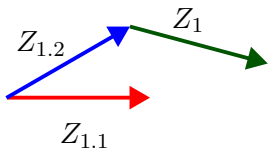

Fig. 1.6: A image created with Inkscape

1.2 lists and emumerations

This is a nested List:

- hallo
  - temp
    - temp
      - temp

And this is a nice checklist:

- ☐ first
- ☐ urgent
  - ☐ sub item
  - ☐ and another
- ☐ continue

1.3 using Units

For this the `siunitx` package is used. It provides Macros for all units.

$$200\,\mathrm{kg} \tag{1.1}$$

The space between a number and it's unit should be a protected half-space, which can be created in latex using `\,` In the classfile siunits is set up to use a separate macro for each subunit, even for size-modifiers:

$$200\,\mathrm{mm}\cdot 2\,\mathrm{MV} \tag{1.2}$$

Siunits also allows for reformatting of numbers as well as units. Use the `\SI` and `\si` macros for that:

$$e = 160.218\times10^{-21}\,\mathrm{C} \tag{1.3}$$

$$1\,\mu\mathrm{m} \tag{1.4}$$

$$124\,\frac{\mathrm{km}}{\mathrm{s}^2} \tag{1.5}$$

$$400\times10^{-6}\,\mathrm{lm} \tag{1.6}$$

1.4 Using formulas

a numberd formula:

$$0,5 = \frac{1}{3} \tag{1.7}$$

Equation 1.7 is nice, but how about multiple lines:

$$\begin{aligned} x &= x^2 + 3 \\ \Leftrightarrow 0 &= x^2 - x + 3 \end{aligned} \tag{1.8}$$

and how could you align formulas?

$$x_1 = 6 \qquad \text{| mit } x \in \mathbb{N} \tag{1.9}$$

$$x_2 = 33 + \left|\frac{1}{4}\right| \qquad \text{| } x_1 + 3 \tag{1.10}$$

$$= 33,25 \qquad \text{| don't number everything}$$

$$x_3 = 10^{22} \tag{1.11}$$

1.5 formating code

use the listings package:

```
#include <stdlib.h>
#include <sdtio.h>

int main(void) {
    printf("Hello World");
    return 0;
}
```

1.6 CSV files

import a csv as table:

A	B	C	D
1	0	3,1	0,2
2	0	7,2	0,5
3	0	8,3	0,3
4	0	2,4	0,1
5	0	4,5	0,2

or do it manually to get more control:

Tab. 1.1: a nice list of numbers

first row	second row
number: 1 m	is not 3,1
number: 2 m	is not 7,2
number: 3 m	is not 8,3
number: 4 m	is not 2,4
number: 5 m	is not 4,5

2 seperating the document

This was inputed from anothe file!!

It can be usefull to seperate yout document into chapterfiles. This allows to only compile the changed parts of the document or work with multiple people at the same time, but on different chapters.
If you use a more advanced text editor like VS-Code, the editor even compiles the hole document, even when you are editin a subfile.

3 attachment

Messprotokoll oder so

As you can see its also possible to have some pages sideways. Just keep in mind you might need to adapt the margins

Bibliography

[Phy20] Fachschaft Physik. *Laboranleitung für das Physiklabor*. GER. Mar. 1, 2020. URL: `https://docs.f1.hs-hannover.de/dl_fachgebiete/labore.php?id_fachgebiet=4` (visited on 03/23/2020).

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