

**Subject**

**Title**

**Subtitle**

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## Declaration of Authorship

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Max Mustermann

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Mira Musterfrau

## Abstract

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# 1 Examples

red text and blue text

different subscripts:  $R_t$   $R_t$

using Units:  $R = 200 \text{ m}\Omega + 345.675 \times 10^{-3} \text{ V/m} - 5 \text{ s/m}^2$

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.

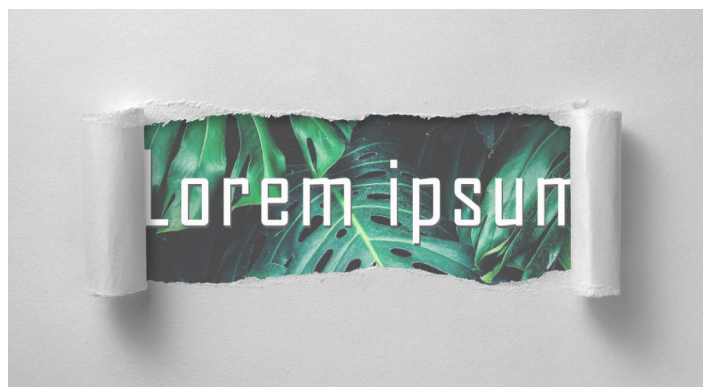


Fig. 1.1: just a random image

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.

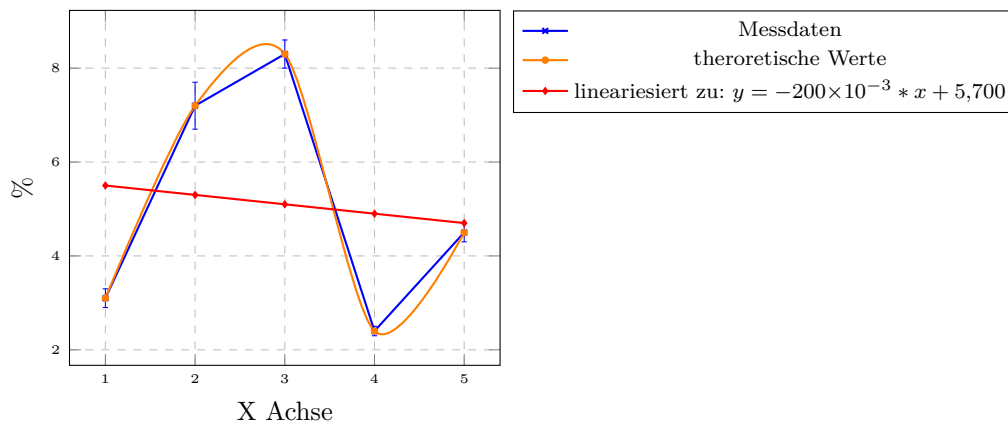


Fig. 1.2: a nice plot

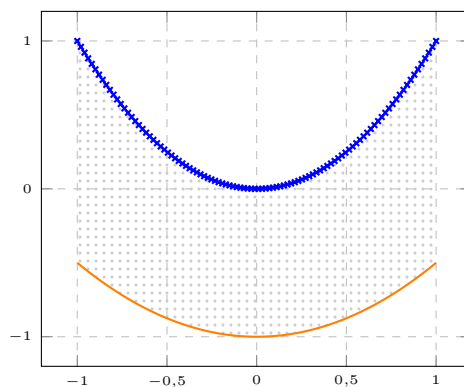
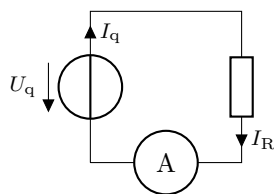


Fig. 1.3: a area plot

Circuit diagrams 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 1.5.



(a) a circuit diagramm

Fig. 1.4: using two figures

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

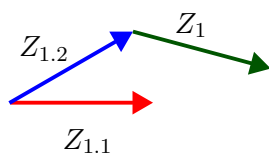


Fig. 1.5: A image created with Inkscape

## 1.2 demo nested listing

- hallo
  - temp
    - temp
      - temp

## 1.3 using Units

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

$$200 \text{ kg} \tag{1.1}$$

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:

$$200 \text{ mm} \cdot 2 \text{ MV} \tag{1.2}$$

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

$$e = 160.218 \times 10^{-21} \text{ C} \mid 2 \text{ nF} \tag{1.3}$$

$$1 \text{ }\mu\text{m} \tag{1.4}$$

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

$$400 \times 10^{-6} \text{ lm} \tag{1.6}$$

## 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?

$$x_1 = 6 \quad | \text{ mit } x \in \mathbb{N} \quad (1.9)$$

$$x_2 = 33 + \left\lfloor \frac{1}{4} \right\rfloor \quad | x_1 + 3 \quad (1.10)$$

$$= 33,25 \quad | \text{ don't number everything} \quad (1.11)$$

$$x_3 = 10^{22}$$

## 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

## 1.7 seperating the document

This was inputed from anothe file!!



## **2 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](https://docs.f1.hs-hannover.de/dl_fachgebiete/labore.php?id_fachgebiet=4) (visited on 03/23/2020).

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