Main Title

Subtitle

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Abstract

A short description of the article.

Contents

1 Introduction

This is just some sample text for illustration purposes. We figured that you probably belong to one of the following groups

1. You are a LaTeX expert, know how to use it, all necessary commands and have used it extensively to typeset documents. In this case you don't need our advice and we simply ask you to use this template for the purpose of having a uniform layout.
2. You have limited LaTeX experience. You have already played around a little bit or compiled a few documents at some point.
3. You have heard about it, but never used it yourself.
4. What is LaTeX?

If you belong to one of the latter 3 groups, we strongly encourage you to get to know (and love) LaTeX. We do not expect you to use LaTeX for this summer academy, but mastering LaTeX is an incredibly valuable – if not necessary – skill. The sooner you get on it, the better.

We cannot provide an introduction to typesetting documents with LaTeX here, there is plenty of good material on the internet. In particular, we will not go into the details of how to compile a LaTeX docmuent. However, we decided to fill this template with a diverse mixture of commands and LaTeX showcases. This might serve as a reminder of the syntax and commands for the people in the second group, point members of the first group to interesting advanced packages and could also be a complementary starting point for people who have never used it. If you have any questions about this template, the compilation process or LaTeX in general feel free to shoot us an email anytime. That said, let's get started!

First, we include a simple equation

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4}T_{\mu\nu}\,. \tag{1}$$

We can later refer to that equation like this (1). The ~ in the source is just an unbreakable space to prohibit a line break at that position. We can also refer to different sections, for example section 3, or section 2.

A blank line creates a new paragraph.

If we do not want the equation to have a number, we can use the "starred" version of the `equation` environment, e.g.

$$\hat{H}|\psi(t)\rangle = i\hbar\frac{\partial}{\partial t}|\psi(t)\rangle\,.$$

As an alternative to the starred version, we can also use the shorter version

$$\int_M KdA + \int_{\partial M} k_g ds = 2\pi\chi(M)\,.$$

Of course, inline math expressions are not problem either: $\pi = \sum_{k=0}^{\infty}(3^k - 1)\zeta(k+1)/4^k$. Let us do something more fancy

$$\nabla \cdot E = \frac{\rho}{\epsilon_0} \tag{2}$$

$$\nabla \cdot B = 0 \tag{3}$$

$$\nabla \times E = -\frac{\partial B}{\partial t} \tag{4}$$

$$\nabla \times B = \mu_0\left(J + \epsilon_0\frac{\partial E}{\partial t}\right)\,. \tag{5}$$

Figure 1: The official new logo of the Studienstiftung. Looking good!

Here we have four equations (2), (3), (4), and (5).

The indicator function of the rational numbers $\chi_{\mathbb{Q}} : \mathbb{R} \to \mathbb{R}$ is defined by

$$\chi_{\mathbb{Q}}(x) := \begin{cases} 1 & \text{if } x \in \mathbb{Q} \\ 0 & \text{if } x \in \mathbb{R} \setminus \mathbb{Q} \end{cases} \tag{6}$$

is Lebesgue integrable with integral $\int_{\mathbb{R}} \chi_{\mathbb{Q}} d\lambda = 0$, but is not Riemann integrable.

2 A new section

If we want to cite other papers, we write a separate file, e.g. `paper.bib`. It contains the metadata of the work we want to cite in a special format called *bibtex*. When looking up references online, you will often be able to copy paste citations in the bibtex format. To refer to such a bibtex entry in our `paper.tex` document, we type `\cite{<name of entry in paper.bib>}`, which results in something like this: [1]. The bibliography is included at the very end of the document.

We love pictures. Let us include that logo of the Studienstiftung again, which we have already seen on the title page. We included it as figure 1. LaTeX usually does a good job positioning the figures on its own if there is enough text around. Note that they will not necessarily show up exactly where you put them in the document. In particular in this short template, they will all be crammed together in weird places. For more manual control check out this link.

Because pictures are so cool[1], let's unleash the awesomeness of pgfplots and TikZ. This is a little bit more advanced and is definitely a challenge for unexperienced LaTeX users. However, the learning curve is steep and it is truly worth the effort. We both love TikZ and pgfplots. For some cool examples click here or here.

Figure 2 shows a little sample picture produced with TikZ[2] that we have stolen from the website mentioned above. Figure 3 shows plots created with pgfplots (also stolen of course).

3 An empty section

Nothing in this section ...

3.1 Just ignore this

... except for this one subsection.

[1] By the way, footnotes are really easy in LaTeX too!

[2] Fun fact: TikZ is a recursive acronym for **T**ikZ **i**st **k**ein **Z**eichenprogramm.

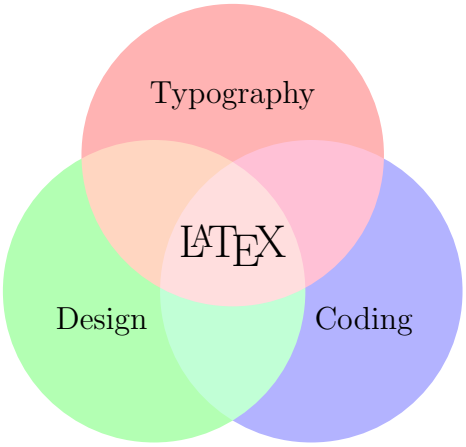

Figure 2: Sweet huh?

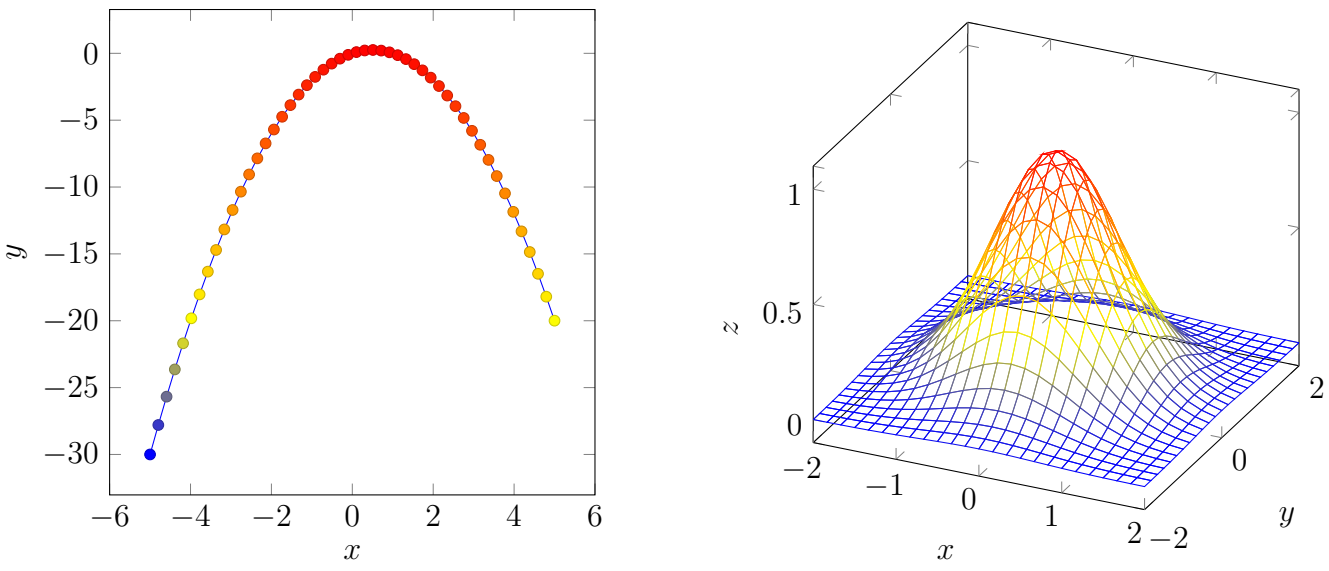

Figure 3: Best option for publication quality plots.

Models	A	B	C	D
Model X	X1	X2	X3	X4
Model Y	Y1	Y2	Y3	Y4

Table 1: Some groundbreaking new results displayed as a table.

3.2 Ignore this too

We just need to fill the table of contents.

4 The end

Almost as nice as pictures and plots are tables. It is increadibly easy to screw up tables in LaTeX[3] and the very basic inbuilt commands make it hard for the user to create truly beautiful tables. The de-facto standard solution to this is the `booktabs` package, which we have already included in our little sample document. Table 1 is an example of what tables should look like.

References

[1] Nils Meyer, Manfred Ries, Stefan Solbrig, and Tilo Wettig. iDataCool: HPC with hot-water cooling and energy reuse. *CoRR*, abs/1309.4887, 2013.

[3] Read the introduction of the `booktabs` manual or check out these slides.