

# How to Write an Excellent Mathematical Thesis

A Comprehensive Guide for TUM Students

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I hereby declare that this thesis is entirely the result of my own work except where otherwise indicated. I have only used the resources given in the list of references.

Munich, 31. März 2023

Felix Klein



## **Zusammenfassung**

Eine kurze Zusammenfassung der Arbeit auf Deutsch.

## **Abstract**

A brief abstract of this thesis in English.



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# 1 Introduction

To use the  $\LaTeX$  templates provided here you will need to add the directory `tum-templates` as a local package directory to your  $\LaTeX$  distribution. An easy way to do this is by setting the environment variable `TEXINPUTS` to `./:` on Linux/Mac systems and to `./;` on a windows machine (meaning: search the current directory and its subdirectories for packages first, then use the usual search path). On a Linux or Mac you can compile this document to a PDF file in a terminal through the following commands (the first command needs to be issued only once):

```
export TEXINPUTS=./:
pdflatex master
bibtex master
pdflatex master
```

On a windows computer, you would use the following commands in a terminal:

```
set TEXINPUTS=./;
pdflatex master
bibtex master
pdflatex master
```

## 1.1 First Section of the Introduction

Hier folgt eine ausführliche Erklärung und Motivation. Insbesondere weisen wir auf den wunderbaren Artikel von Edmonds [Edm65] und auf [GJ79] für weitere Hintergründe.

## 1.2 Second Section of the Introduction

Wichtige Informationen finden sich in table 1.1.

Name	Place of Birth
Gauß	Braunschweig
Euler	Basel
Edmonds	Washington, D.C.

**Table 1.1** A most wonderful table

### 1.2.1 A Lonesome Subsection

Eine ausführliche “Erklärung” findet der aufmerksame Leser in section 1.1.

## 1 Introduction

Hier geht es weiter mit dem Text.

## 2 Mathematical Foundations

### 2.1 Definitions

**Definition 2.1.1 (Definitheit)** *Hier definieren wir definitive Definitheit.*

**Satz 2.1.2 (vom X)** *War wohl nix. Es gilt aber*

$$\sum_{i=1}^n f_i(x) = \int \hat{f}(x) dx$$



# **A Appendix**

## **A.1 Supporting Data**

## **A.2 Some Code Listings**



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## Bibliography

- [Als08] B. Alspach. “The wonderful Walecki construction”. In: *Bull. Inst. Combin. Appl* 52 (2008), pp. 7–20.
- [Edm65] J. Edmonds. “Paths, trees, and flowers”. In: *Canadian Journal of Mathematics* 17 (1965), pp. 449–467.
- [GS62] D. Gale and L. S. Shapley. “College admissions and the stability of marriage”. In: *The American Mathematical Monthly* 69.1 (1962), pp. 9–15.
- [GJ79] M. R. Garey and D. S. Johnson. *Computers and Intractability*. WH Freeman & Co, 1979.