

Max Mustermann

English Title of the Thesis

Deutscher Titel der Arbeit

Bachelor Thesis

Helmut-Schmidt-Universität / Universität der Bundeswehr Hamburg

Studiengang:	Engineering Science
Matr.-Nr.	xxxxx / ET20xx
Übernahme:	xx. Monat 20xx
Betreuer:	Univ.-Prof. Dr.-Ing. Hugo Muster
Weiterer Prüfer:	Univ.-Prof. Dr.-Ing. xy

Versicherung an Eides statt

Die wissenschaftliche Eigenleistung steht im Vordergrund meiner Arbeit. Dies umfasst insbesondere die eigenständige Entwicklung der Fragestellung, die kritische Auseinandersetzung mit dem Forschungsstand sowie die eigenverantwortliche Analyse, Interpretation und Darstellung der Ergebnisse. Ich versichere, dass ich die Arbeit selbstständig und ohne unzulässige Hilfe Dritter verfasst habe. Dabei wurden ausschließlich die angegebenen Quellen und Hilfsmittel verwendet; sämtliche wörtlich oder sinngemäß übernommenen Inhalte habe ich entsprechend gekennzeichnet und ordnungsgemäß nachgewiesen. Die Arbeit wurde bislang weder in gleicher noch in ähnlicher Form im Rahmen einer anderen Prüfung eingereicht. Zudem bestätige ich, dass die eingereichte elektronische Fassung mit den abgegebenen Exemplaren übereinstimmt und ich einer Verarbeitung, Speicherung sowie Nutzung der Arbeit zum Zweck der Täuschungs- und Plagiatsprüfung zustimme.

Der Umgang mit generativer künstlicher Intelligenz (GenAI) erfolgt gemäß der „Vereinbarung zur Nutzung von KI-basierten Werkzeugen und GenAI-Lösungen innerhalb von Seminaren und Abschlussarbeiten“. Die darin festgelegten Regeln, insbesondere zur Transparenz, Dokumentation und Kennzeichnung der Nutzung, werden eingehalten. Dabei habe ich alle eingesetzten KI-Tools sowie deren Nutzungsumfang nachvollziehbar dokumentiert. Durch KI erzeugte Inhalte wurden von mir kritisch geprüft, eigenständig überarbeitet und kenntlich gemacht. Unabhängig vom Einsatz generativer KI liegt die Verantwortung für den gesamten Inhalt der Arbeit ausschließlich bei mir. Mir ist bekannt, dass eine Nutzung von KI-Systemen außerhalb der zulässigen Vorgaben laut der Vereinbarung als Täuschungsversuch gewertet werden kann und prüfungsrechtliche Konsequenzen nach sich ziehen kann.

Hamburg,

....

(Datum) (Unterschrift)

Contents

Versicherung an Eides statt **i**

Frequently Used Formula Symbols and Abbreviations **iii**

1. Introduction **1**
1.1. Style 1
1.2. Formatting 2
1.2.1. Images/Tables 2
1.2.2. Equations 3
1.2.3. References 5

2. Theoretical Foundations **6**

3. Chapter of own Contribution **7**

4. Summary and Outlook **8**

A. Appendix **9**
A.1. Source Code 9

Bibliography **10**

Frequently Used Formula Symbols and Abbreviations

$\vec{E}$	Electric field strength
EMV	Electromagnetic compatibility

1. Introduction

The introductory chapter shall contain in a few (≤ 4) pages:

- Motivation and introduction to the topic
- Aim of the work
- Outline of the work (one paragraph for each chapter), understandable for a reader who has not yet read the rest of the thesis.

The following chapters are intended to present the (e.g. theoretical) basics, your own contributions (in one or more chapters) and a retrospective summary. The individual chapters can be written in separate files.

1.1. Style

- Plausible order of subjects
  - Keep to logical thread, e.g.: Problem, boundary conditions, solution concept, solution
  - Avoid mind jumps

  Hint: First draft the outline of the thesis in pencil on paper, i.e. determine content and sequence and divide into chapters and sections.
- Concise, succinct wording
  - Avoid repetitions, empty phrases, unnecessary words
  - Avoid misleading choice of words
  - Avoid first person form: 'It has been measured' instead of 'I have measured'.
  - Avoid one-form: 'It was measured' instead of 'One can measure'
- Names/symbols
  - Do not change names and symbols for terms within the thesis, e.g. always use 'printed circuit board' and never 'board'.

  - Define abbreviations only once, at the first occurrence in the text, by indicating the abbreviation in brackets after the term to be abbreviated. Afterwards use only use the abbreviation. Example: 'Electromagnetic compatibility (EMC) means ... '

  - Do not use unnecessary indices and symbol additions.

- Clarification of authorship

  - Avoid formulations that do not clearly distinguish between the author's own authorship and that of others, e.g.
    '... the following method is applicable ... '

  - In case of foreign authorship instead: '... the following method [1, 2] is applicable ... ' or '... the following known method is applicable ... '

  - In case of own authorship instead: '... the following method is proposed here ... '

- Elevations

  - Formulate particularly important concepts, statements, and procedures as quotable. Formulate definitions, sentences, rules, and algorithms, respectively

  - Explanations to definitions, sentences, rules and algorithms can follow, i.e. here terms, quantities, procedures etc. can be introduced, before they can be quoted, procedures etc. can be introduced before they are explained.

  Example:

  Definition 1.1 (Linear two-terminal) *A linear two-terminal is a two-terminal for which holds: ...*

1.2. Formatting

1.2.1. Images/Tables

- Provide a caption for each image and a table caption for each table
- Examples of references to an image:
  ' ... according to Fig. 1.1 ... ' and ' Fig. 1.2 shows ... '
- Example of a reference to a table: '... in Table 1.1 are compiled ... '

- Insert images/tables after paragraphs, not after a colon. Leave the positioning to LaTeX. Optimize the positioning only as last step, when the text of the paper is already complete! Positioning is difficult when there is little text between the images. Optimize by omitting the options t(op), b(ottom), p(age) and forcing h(ere) with the option [h!]



Figure 1.1.: Image as jpg file



Figure 1.2.: Image with subsequently inserted text (overpic)

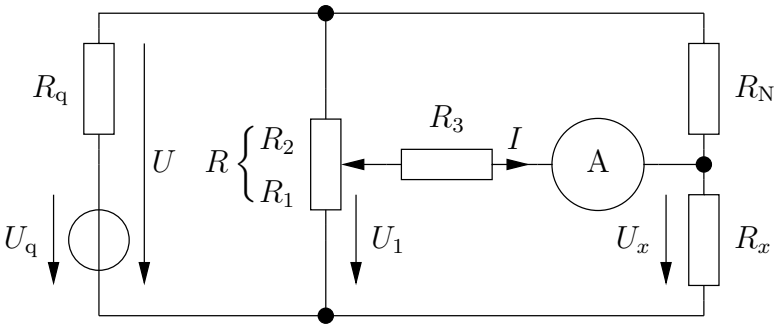
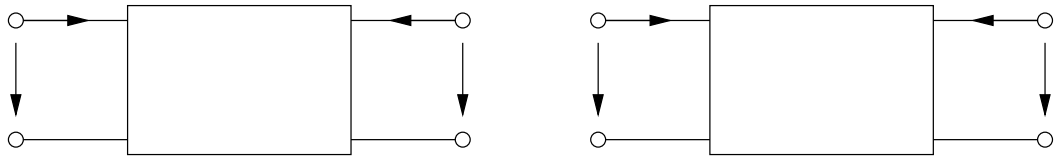


Figure 1.3.: Image generated with xfig

1.2.2. Equations

- Symbols for quantities and variables are always in italics, i.e. in math mode, e.g. $a = b + c$ or $U = R\,I$.
- The following must *not* be printed in italics. In formula mode, use `\mathrm{...}` to print:



(a) Caption01 (b) Caption02

Figure 1.4.: 2 Images

Table 1.1.: Input parameters

Designation	Value
L_1	9μH
L_2	8μH

Euler's number e,
the imaginary unit j,
the differential symbol d,
unit symbols including their prefixes (kV, mA),
names of math. Functions ($\mathrm{si}(x) = \sin(x)/x$),
as well as abbreviations in general, which stand for words (not quantities, variables).
This also applies to indices!

- Use punctuation marks before and after equations, e.g. there must be a period at the end of an equation. a period at the end of an equation if a sentence ends with the equation.

- Arrange several independent equations one below the other, not side by side.

$$\underline{U} = \mathrm{j}\,5\,\mathrm{V} = \mathrm{j}\,5000\ \mathrm{mV} = 5000\,\mathrm{e}^{\mathrm{j}\pi/2}\ \mathrm{mV}\,,$$

$$\mu = \mu_\mathrm{r}\,\mu_0 = \text{const.}\,, \tag{1.1}$$

$$\mu_0 = 4\pi \cdot 10^{-7}\ \mathrm{Vs/Am} \tag{1.2}$$

$$\boldsymbol{A}\boldsymbol{x} = \boldsymbol{b} \tag{1.3}$$

$$\begin{aligned} i_C(t) &= \frac{\mathrm{d}Q}{\mathrm{d}t} = C\frac{\mathrm{d}U_C}{\mathrm{d}t}\,, \\ I_\mathrm{k} &= U_0/R_\mathrm{i}\,. \end{aligned} \tag{1.4}$$

- Reference to equation, e.g.: 'as (1.1) shows ...'

1.2.3. References

- Provide a bibliography at the end of the thesis: Collect bibliographical references in a separate .bib file or specify them in the bibliography environment.
- Each entry of the bibliography must be cited at an appropriate place in the text of the thesis.
- Literature reference e.g. '... solved by the method of Hampe [1]' or '... solved by an optimization procedure [3, 4, 5, 6]'.

2. Theoretical Foundations

Purpose of this chapter: The thesis can be read as a whole without the aid of further literature.

Compile here those fundamentals on which the work is based. Things that are subject of compulsory subjects of the study should not be explained in detail. Mention complicated contexts, which are used later in the work and make them plausible, but do not derive them in detail.

3. Chapter of own Contribution

Possibly several chapters in reasonable order.

4. Summary and Outlook

Summarize the work here in retrospect, i.e. briefly discuss ways, methods and briefly discuss the results. Terms introduced in the thesis may be used here (in contrast to the summary and the introduction).

A. Appendix

Place here (possibly also in further appendices) only such things, which are so special and extensive that they would hinder the flow of reading if they were dealt with in the regular chapters. The work must be readable and plausible even if you ignore the appendix. Do not include things in the appendix that are not of interest to the reader anyway, but omit them or include them as a separate file on the data medium.

Example of contents of appendices:
Own, longer, non-trivial derivations, intermediate calculations or formula compilations, tables with measurement results, source code

Examples of content to be omitted altogether: Longer program printouts, long lists of unevaluated data.

A.1. Source Code

Only attach source code that is of interest to the reader. Further only on data medium.

Print source code verbatim:

```
function out = sum(In1)
  x=0;
  for a = 1:In1 % loop
    x = x+a;
  end
  out=x;
endfunction
```

Bibliography

[1] M. Hampe. *Analyse und Optimierung des Spannungsversorgungssystems mehrlagiger Leiterplatten*. PhD thesis, Helmut-Schmidt-Universität / Universität der Bundeswehr Hamburg, 2006.

[2] H. Hugo. Untersuchung zu xyz. In *IEEE Int. Symposium on xyz*, pages 450–454, Chicago, 2005. IEEE.

[3] M. Hampe and S. Dickmann. Single Summation Expression for the Impedance of Rectangular PCB Power-Bus Structures Loaded with Multiple Lumped Elements. *IEEE Transactions on Electromagnetic Compatibility*, 49(1):58–67, Feb. 2007.

[4] O. Zinke and H. Brunswig. *Hochfrequenztechnik I - Hochfrequenzfilter, Leitungen, Antennen*. 5. Auflage. Springer-Verlag, 2000.

[5] www.wikipedia.de/wiki/gleichstrommaschine, version 16:03, 08.10.2009.

[6] M. Mustermann. Untersuchungen zur EMV von Gleichstrommotoren. Master's thesis, Helmut-Schmidt-Universität / Universität der Bundeswehr Hamburg, 2005.