



Fachgebiet
Dynamik und Betrieb technischer Anlagen

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This Is a Very Good Title That Illustrates What This Great Piece of Work Is All About and That Gives an Impression of What a Long Title Looks Like

Wissenschaftliche Arbeit zur Erlangung des Grades
Bachelor/Master of Science (B.Sc./M.Sc.)

vorgelegt von
First name second name

Matrikelnummer
XXXXXX

Unter der wissenschaftlichen Leitung von
Prof. Dr.-Ing. habil. Jens-Uwe Repke

Unter der wissenschaftlichen Betreuung von
My advisor, M.Sc.

Berlin, Dezember 2018

Technische Universität Berlin
Fakultät III – Prozesswissenschaften
Institut für Prozess- und Verfahrenstechnik
Fachgebiet Dynamik und Betrieb technischer Anlagen

Eidesstattliche Erklärung/Affidavit

Hiermit erkläre ich an Eides statt, dass ich die vorliegende Arbeit selbstständig und eigenhändig sowie ausschließlich unter Verwendung der aufgeführten Quellen und Hilfsmittel angefertigt habe.

FIRST NAME SECOND NAME

Berlin, 24. Dezember 2018

I hereby confirm that I prepared this thesis independently and by exclusive reliance on literature or tools indicated herein.

FIRST NAME SECOND NAME

Berlin, 24th December, 2018

Danksagung/Acknowledgements

Ein paar nette Worte / Some nice words...

Zusammenfassung/Abstract

Deutsch

Dies hier ist ein Blindtext zum Testen von Textausgaben. Wer diesen Text liest, ist selbst schuld. Der Text gibt lediglich den Grauwert der Schrift an. Ist das wirklich so? Ist es gleichgültig, ob ich schreibe: „Dies ist ein Blindtext“ oder „Huardest gefburn“? Kjift – mitnichten! Ein Blindtext bietet mir wichtige Informationen. An ihm messe ich die Lesbarkeit einer Schrift, ihre Anmutung, wie harmonisch die Figuren zueinander stehen und prüfe, wie breit oder schmal sie läuft. Ein Blindtext sollte möglichst viele verschiedene Buchstaben enthalten und in der Originalsprache gesetzt sein. Er muss keinen Sinn ergeben, sollte aber lesbar sein. Fremdsprachige Texte wie „Lorem ipsum“ dienen nicht dem eigentlichen Zweck, da sie eine falsche Anmutung vermitteln. Dies hier ist ein Blindtext zum Testen von Textausgaben. Wer diesen Text liest, ist selbst schuld. Der Text gibt lediglich den Grauwert der Schrift an. Ist das wirklich so? Ist es gleichgültig, ob ich schreibe: „Dies ist ein Blindtext“ oder „Huardest gefburn“? Kjift – mitnichten! Ein Blindtext bietet mir wichtige Informationen. An ihm messe ich die Lesbarkeit einer Schrift, ihre Anmutung, wie harmonisch die Figuren zueinander stehen und prüfe, wie breit oder schmal sie läuft. Ein Blindtext sollte möglichst viele verschiedene Buchstaben enthalten und in der Originalsprache gesetzt sein. Er muss keinen Sinn ergeben, sollte aber lesbar sein. Fremdsprachige Texte wie „Lorem ipsum“ dienen nicht dem eigentlichen Zweck, da sie eine falsche Anmutung vermitteln.

English

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List of Symbols

Greek Symbols

Symbol	Description	Unit
α	Non-randomness factor in NRTL-Modell	–
α	Parameter in Gleichung für Verdampfungsenthalpie	J mol^{-1}
α	Trennfaktor für binäre VLEs	–
Δ	Differenz	verschieden
Λ	Parameter in Wilson-Modell	–

Indices

Symbol	Description
i	Index für Komponenten
j	Index für Komponenten
k	Index der Strukturgruppe

Constants

Symbol	Description	Unit
R	Universelle Gaskonstante = 8.314 46	$\text{J mol}^{-1} \text{K}^{-1}$

Latin Symbols

Symbol	Description	Unit
A	Parameter in Antoine-Gleichung	–

List of Symbols

A	Porter-Parameter	-
B	Parameter in Antoine-Gleichung	K
B	Zweiter Virialkoeffizient (Leiden-Form)	$\text{m}^3 \text{mol}^{-1}$
B'	Zweiter Virialkoeffizient (Berlin-Form)	Pa^{-1}

Dimensionless Numbers

Symbol	Description	Definition
Re	Reynoldszahl	$\frac{wd\rho}{\eta}$

Operators

Symbol	Description	Definition
∇	Nabla-Operator	$\left[\frac{\partial}{\partial x_1}, \dots, \frac{\partial}{\partial x_n} \right]^T$
rot	Rotationsoperator	$\text{rot } \vec{g} = \nabla \times \vec{g}$

Superscripts

Symbol	Description
E	Exzess
III	Phase/Zustand 3
II	Phase/Zustand 2
I	Phase/Zustand 1

Subscripts

Symbol	Description
0	Reinstoff
0	zu Beginn der Reaktion
c	Kritisch

List of Abbreviations

ab Active bounds

DAE Differential-algebraic equation (system)

SUNDIALS Suite of nonlinear and differential-algebraic equation solvers

List of Algorithms

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1 Introduction

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1 Introduction

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Algorithm 1.1: Super-AlgoMan.

Data: ???**Result:** Hahahaha

initialization;

while möp **do**

bliblubla;

if höhöhö **then**

bipö;

bipö2;

else

ohhhhhhhhh;

end**end**

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- (Coker, 2007), Coker (2007)
 - (Abrams and Prausnitz, 1975), Abrams and Prausnitz (1975)
 - (NIST Chemistry Webbook, 2017), NIST Chemistry Webbook (2017)
 - (Cuda, 2012), Cuda (2012)

2 Theory

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2 Theory

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3 Methods

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Entry 1	Entry 2	Entry 3
Unit 1	Unit 2	Unit 3
1	2	3
4	5	6

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3 Methods

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Algorithm 3.1: Super-AlgoMan.

Data: ???

Result: Hahahaha

initialization;

while möp **do**

 bliblubla;

if höhöhö **then**

 bipö;

 bipö2;

else

 ohhhhhhhhh;

end

end

- (Coker, 2007), Coker (2007)
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4 Results and Discussion

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4 Results and Discussion

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4 Results and Discussion

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Algorithm 4.1: Super-AlgoMan.

Data: ???

Result: Hahahaha

initialization;

while möp **do**

 bliblubla;

if höhöhö **then**

 bipö;

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end

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5 Conclusion and Outlook

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5 Conclusion and Outlook

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Algorithm 5.1: Super-AlgoMan.

Data: ???**Result:** Hahahaha

initialization;

while möp **do**

bliblubla;

if höhöhö **then**

bipö;

bipö2;

else

ohhhhhhhhh;

end**end**

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A Appendix 1

Code A.1: Code example for AMPL.

```
1 reset; # all blue words are keywords in this language
2           # they are defined in the file 05_Appendix/
3           a_CodeLanguageSpecifications.tex
4
5 model simulation.mod;
6 data simulation.dat;
7 include initial.dat;
8 option ipoptoptions "halt_on_ampl_error,yes";
9 let e0_param := 4;
10
11 solve;
```


B Appendix 2

Code B.1: Code example for Matlab.

```
1 clc
2 clear
3 close all
4
5 e0_param = 4;
6
7 j=0;
8 for i=1:e0_params % this loop is incredibly smart
9     if l==2
10         j=j+1;
11     else
12         j=j-1;
13     end
14 end
```