

# Dr. Marcel Rothering

## Curriculum Vitae

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### Personal Details

Date of birth 22/10/1987  
Place of birth Vreden  
Citizenship German  
Gender Male

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### Data Scientist

03/2019 - today Data Scientist at *Siemens AG - Digital Industries*

#### Customer Facing Data Scientist for Proof of Concepts

- productive anomaly detection application for depaneling machines
- productive statistical test reduction application for end of line test for electrical drives
- productive anomaly detection application for a kodak printer used in the production line of feminine hygiene products
- productive statistical analysis application for maximizing body paintshop line utilization and finding failure root causes
- design of experiment for optimizing printer settings for printed circuit board production
- process optimization for the production of semolina

#### Projects with Focus on Machine Learning Operations

- development of monitoring algorithms for an energy cost reducing *model predictive control application* in office buildings
- development of monitoring algorithms for a welding point virtual testing model
- operationalizing a false call reduction algorithm running on Siemens Industrial Edge for a surface mount technology production line

#### Product Portfolio Development

- AI Operations Services for machine learning solutions running on Siemens Industrial Edge devices
- python SDK extension for generalizable quality monitoring of tabular data on Siemens Industrial Edge
- customer and problem hypothesis validation

## Additional Tasks

- founding of a data science journal club about trustworthy AI and Machine Learning operations
- organizing of a data science guild to discuss data science projects
- supervision of graduate and undergraduate students
- leading several ideation and scoping workshops for data science use cases
- generating intellectual property (four filed patent applications used in production)

## Main Technologies and Tools

- platforms and ecosystems: Azure ML Studio, AWS Sagemaker, Siemens Industrial Edge
- tools: Python, Visual Studio Code, Pandas, Scikit-Learn, Keras, Matplotlib, Plotly

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## IT Consultant

02/2017 - 12/2018 Consultant for Big Data and Data Science at *saracus consulting GmbH*

### Tasks

- projects with focus on Data Science and Data Engineering for insurance companies
- cluster computing with Cloudera CDH and Hortonworks HDP
- leading data science, data engineering and cluster administration workshops for customers
- supervision of student seminars in collaboration with the *Westfälische Wilhelms-Universität Münster*

### Main Technologies and Tools

- platforms: AWS, Cloudera and Hortonworks
- tools: Spark, Hive, Impala, Sqoop, Python, Pandas, Scikit-Learn and Keras

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## Research Assistant & PhD Student (Academic degree: Dr. rer. nat.)

12/2012 - 12/2016 Research assistant and PhD student for theoretical particle physics at the *Westfälische Wilhelms-Universität Münster*

PhD thesis *Precise predictions for supersymmetric particle production at the LHC; Grade: magna cum laude*

Emphasis Theoretical particle physics

Supervisor Prof. Dr. Klasen

### Tasks

- program development for resummation predictions for supersymmetric particle production at the Large-Hadron-Collider (<https://resummino.hepforge.org/>)

- tutor for undergraduate courses like mechanics, thermodynamics, electrodynamics and quantum mechanics
- supervision of Bachelor and Master theses
- supervision of an internship project: DAAD RISE (Research Internships in Science and Engineering)

## Publications

1. B. Fuks, M. Klasen, M. Rothering, *Soft gluon resummation for associated gluino-gaugino production at the LHC*, JHEP 07:053, 2016.
2. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Revisiting slepton pair production at the Large Hadron Collider*, JHEP 01:168, 2014.
3. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Precision predictions for electroweak superpartner production at hadron colliders with Resummino*, Eur. Phys. J. C 73, 2480, 2013.
4. B. Fuks, M. Klasen, David R. Lamprea, M. Rothering, *Gaugino production in proton-proton collisions at a center-of-mass energy of 8 TeV*, JHEP 10:081, 2012.

## Academic Studies

### Master's Degree Program in Physics (Academic Degree: M. Sc.)

- 10/2010 - 12/2012 Master's degree in physics at the Westfälische Wilhelms-Universität Münster;  
Grade: 1.2
- Master's thesis *Resummation predictions for slepton pair-production and implications for dark matter*; Grade: 1.0
- Emphasis Theoretical particle physics
- Supervisor Prof. Dr. Klasen
- Minor Economy for natural scientists (innovation management and concepts of strategical analysis)
- 2012 Two-week international summer school and conference on High Energy Physics: Standard Model and Beyond (ISSCSMB '12)

### Bachelor's Degree Program in Physics (Academic Degree: B. Sc.)

- 10/2007 - 10/2010 Bachelor's degree in physics at the Westfälische Wilhelms-Universität Münster;  
Grade: 2.1
- Bachelor's thesis *Optically induced dynamics in coupled two-level-systems*; Grade: 1.3
- Emphasis Theoretical solid state physics
- Supervisor Prof. Dr. Kuhn
- Minor Philosophy (logic and metaphysics)

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## School Education

- 8/2003 - 7/2007 Secondary school *Städtisches Heriburg-Gymnasium in Coesfeld*; *Abitur-Grade: 2.7*
- 8/1998 - 7/2003 Secondary school *Städtisches Gymnasium Nepomucenum in Coesfeld*
- 8/1994 - 7/1998 Primary school *Pankratius-Grundschule in Gescher*

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## Language Skills

- German Mother tongue
- Englisch Fluent written and spoken
- French Elementary level

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## Technical Skills

- Programming languages Python (professional), C/C++ (advanced), R (basics), Java (basics), Scala (basics), Fortran(basics) and Shell (basics)
- Software-Tools and Frameworks Mathematica, Spark, Hive, Sqoop, several Python libraries for machine learning like Keras, Tensorflow, Sklearn, Pandas, Matplotlib and Seaborn,  $\LaTeX$ , Gnuplot and MS-Office
- Hadoop Distributions Cloudera CDH and Hortonworks HDP
- Operating Systems Windows and Unix-based systems
- Platforms and Ecosystems Amazon Web Services, Microsoft Azure and Siemens Industrial Edge

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## Certificates

- 04/2017 CCA Spark and Hadoop Developer
- 05/2017 Cloudera Certified Administrator for Apache Hadoop (CCAHA)
- 05/2018 MIT Professional Education - Internet of Things: Roadmap to a Connected World

Nürnberg, November 12, 2022