A photograph of a professor standing next to a whiteboard on a grassy lawn, addressing a group of students sitting on the grass. The background shows a large building and trees.

Faculty of Mathematics
School of Science

Master's courses at the Faculty of Mathematics and career prospects

Jun.-Prof. Dr. Markus Schmidtchen



QS Ranking 2022 (sciences)	
Dresden:	124
Leipzig:	>400
FU Berlin:	139
HU Berlin:	75
TU Berlin:	108

TU Dresden is

- strong in **research**
- one of the 11 universities of **excellence**
- full university with **huge range of subjects**
- university sports, university orchestra, university choir, language courses, ...



We are **big** and **young** !

27 professors

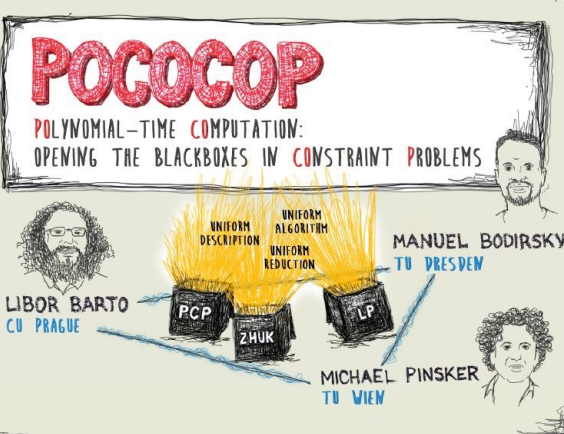
>90 academic staff

→ extensive and varied range of courses

→ very good supervision ratio

→ Research-related teaching





European Research Council
 Established by the European Commission

8 Mio €
 @TUD: 3.4 Mio €



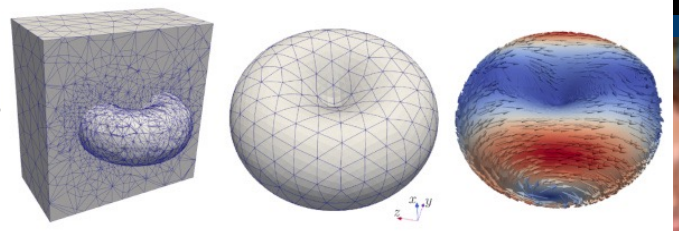
Center for Scalable
 Data Analytics and
 Artificial Intelligence



2.4 Mio €
 @TUD: 1.8 Mio €

Research Unit 3013

Vector- and Tensor-Valued Surface PDEs





By joining us you become part of a working group and a **big maths family!**

We **accompany** you through the ups and downs in your studies!

→ Kompakter Supprt



We do maths out of passion!

Environmental initiative of the Faculty of Mathematics



Take an active part in shaping the faculty!

- Fachschaftrrat
- be a mentor or tutor
- be ambassador of mathematics for highschool students



going in depth

Application

Set your own priorities

going in width

Internationalization

Erasmus, ECMI Modeling Weeks

English language

**research-oriented and
problem-oriented lecture**

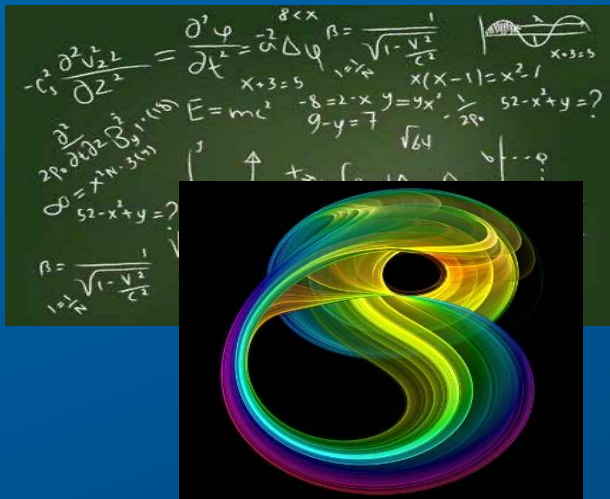
**Interactive teaching formats
WIA, Projekt, MODSEM**

be part of a working group

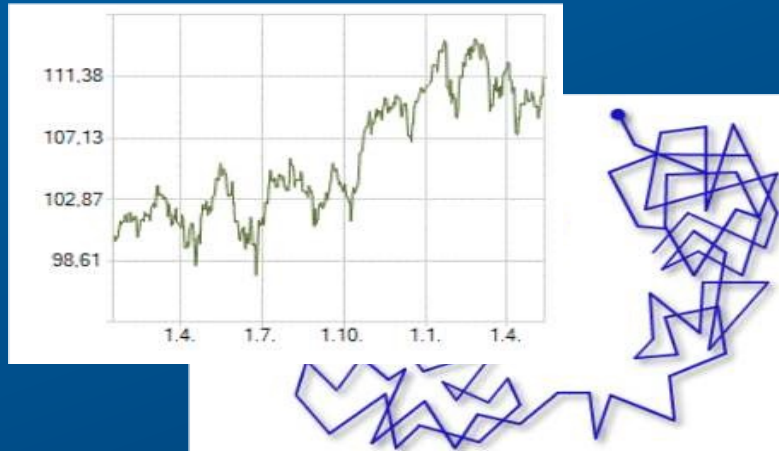
- student research projects
- Master's thesis

**Master's thesis and project:
create your own work**

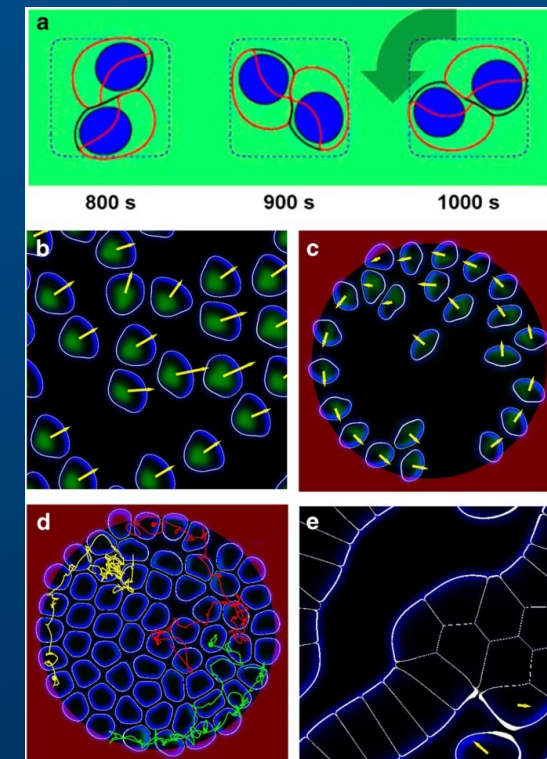
Mathematics



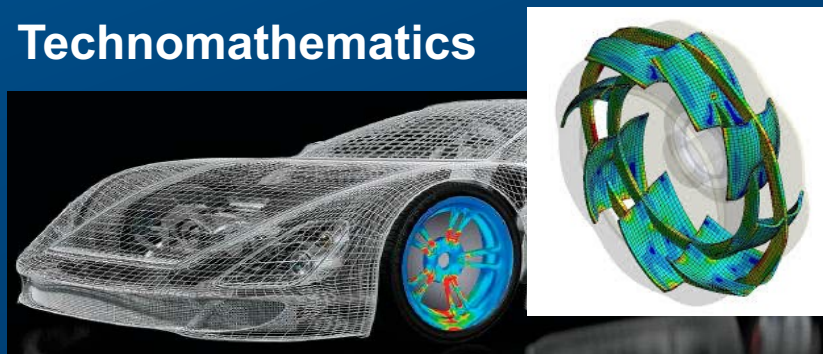
Mathematics in Business and Economics



Computational Modeling and Simulation

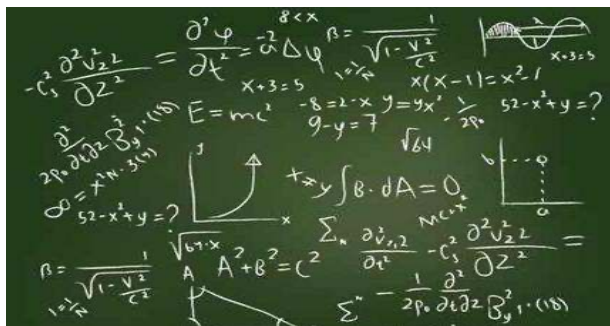


Technomathematics



Structure of the course

Master of Science **Mathematics**



Master thesis (27 LP)

Mathematics modules

2 mandatories (9 LP)

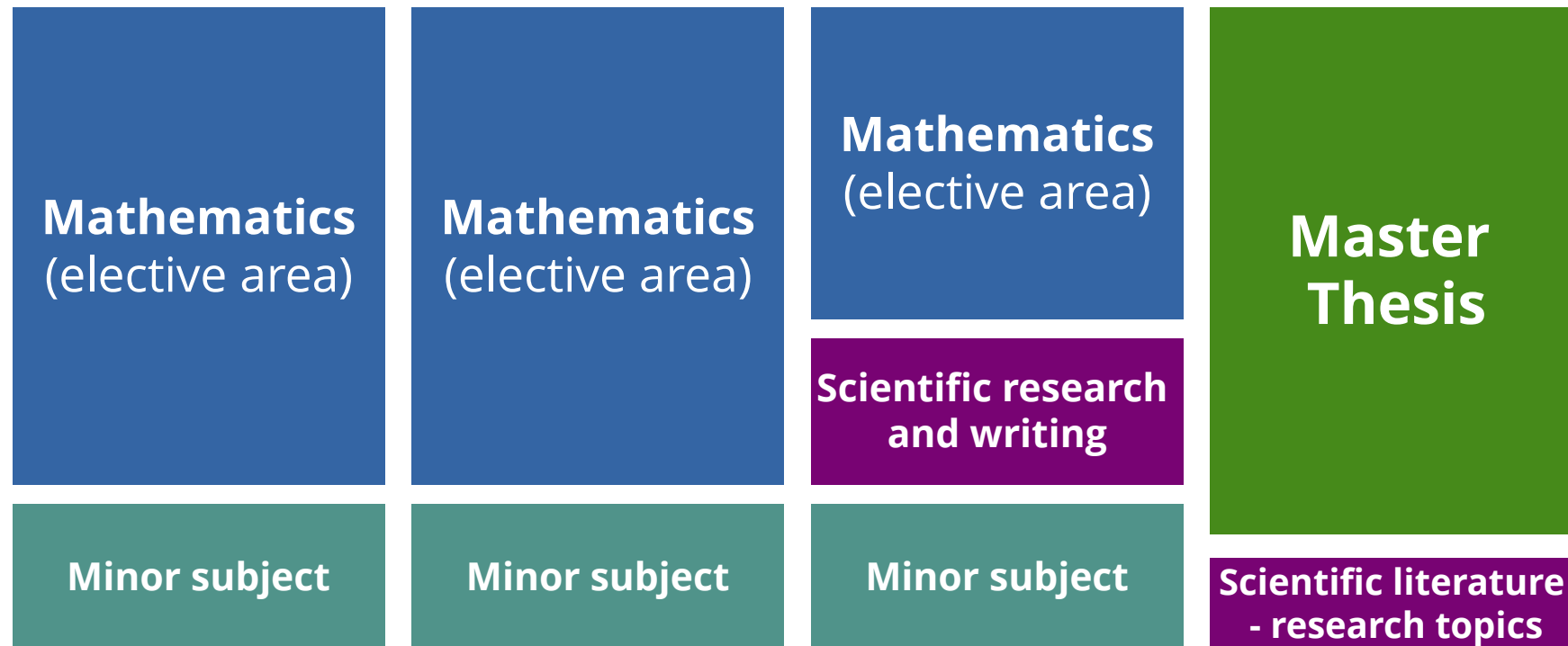
11 electives (66 LP)

Minor subjects

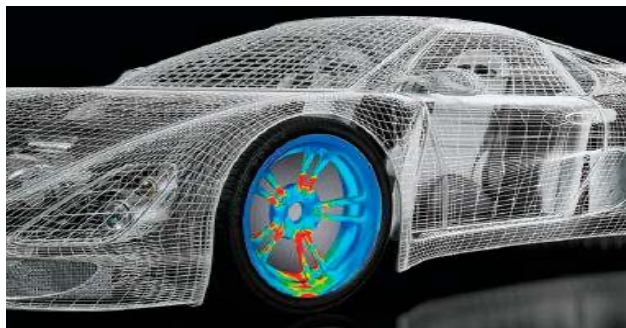
 (18 LP)

Electrical engineering,
computer science, mechanical
engineering, physics,
Business and Economics
(and others)

Options: basics or advanced



1. Algebraic structures
2. Model theory
3. Discrete structures
4. Algebra and number theory
5. Group theory
6. Commutative algebra
7. Noncommutative geometry
8. Algebraic topology
9. Groups and geometry
10. Algebraic methods in geometry
11. Real algebra
12. Discrete optimization
13. Functional analysis
14. Methods of functional analysis
15. Nonlinear analysis
16. Methods of analysis
17. Partial differential equations
18. Methods for partial differential equations
19. Probability with martingales
20. Methods of financial and actuarial mathematics
21. Mathematical statistics
22. Stochastic calculus
23. Stochastic processes
24. Statistical methods
25. Dynamical systems – Basic concepts
26. Dynamical systems – Modern concepts and applications
27. Continuous optimization
28. Numerical methods for partial differential equations
29. Numerical methods for partial differential equations – Advanced concepts
30. Mathematical methods for Continuum mechanics
31. Finite element methods – Theory, implementation and applications
32. Scientific computing – Advanced concepts
33. Scientific programming – Advanced concepts
34. Models and methods of applied mathematics
35. Models and methods of pure mathematics



Master thesis (27 LP)

Mathematics modules

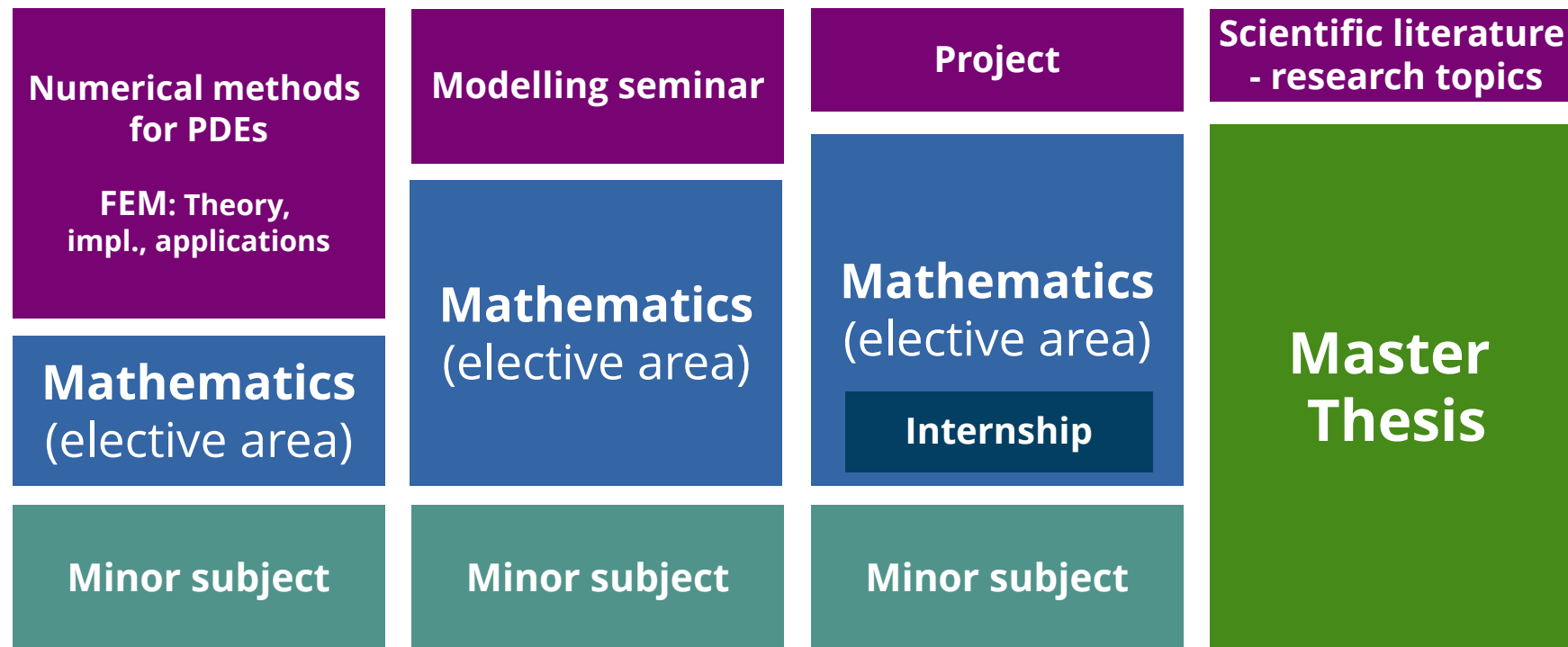
5 mandatories (27 LP)

7 electives (42 LP)

Minor subjects (24 LP)

Electrical engineering,
computer science, mechanical
engineering, physics
(and others)

Options: basics or advanced





Master thesis (27 LP)

Mathematics modules

7 mandatories (39 LP)

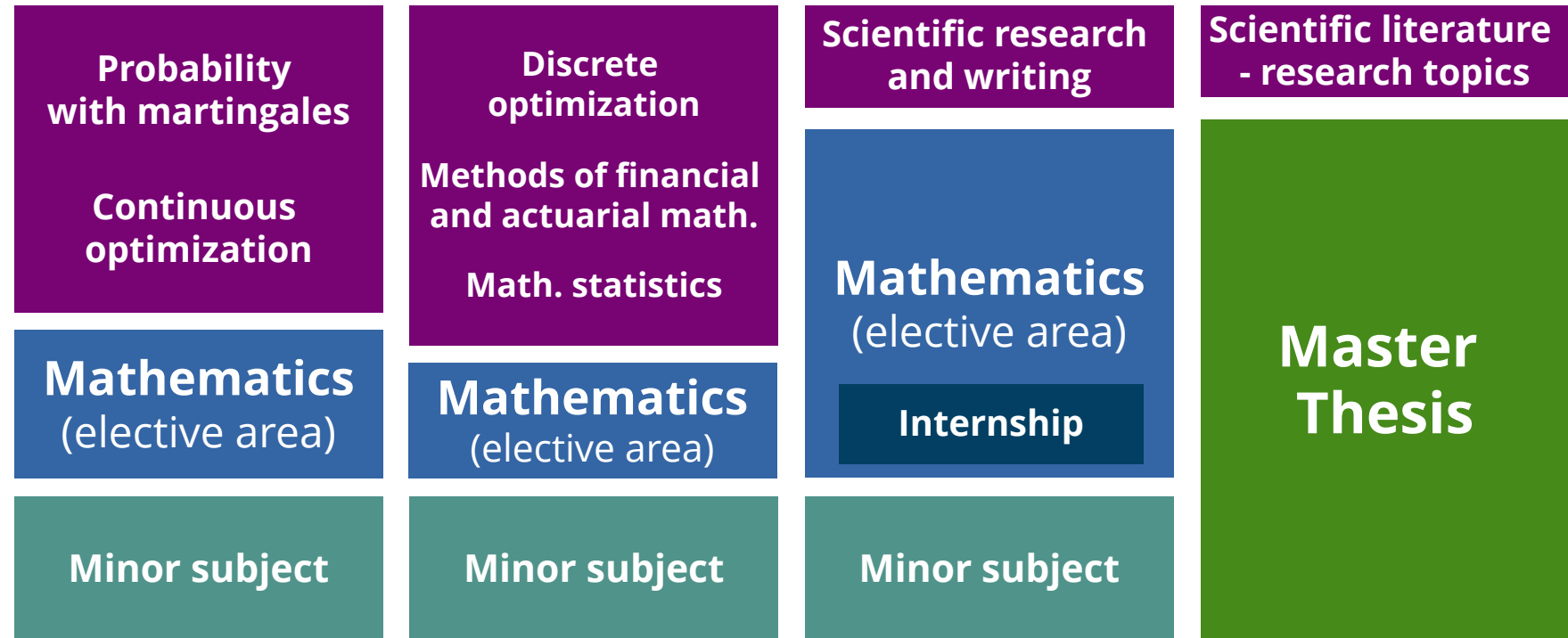
4 electives M (24 LP)

1 elective S (6 LP)

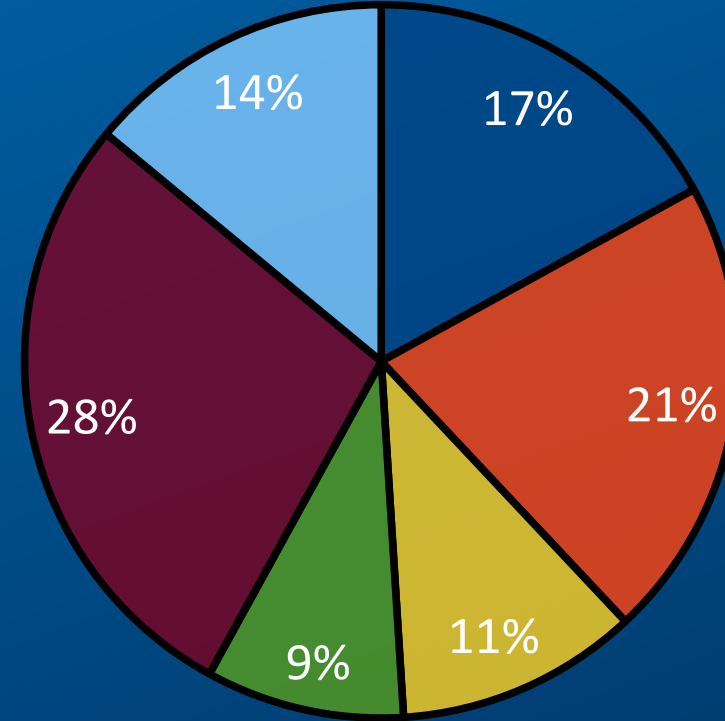
Minorsubject (24 LP)

Business and Economics

Options: basics or advanced



- Mathematik-, Biologie-, Chemie-, Physikberufe
- Informatik und andere IT-Berufe
- Unternehmensführung und -organisation
- Finanzdienstleistungen, Rechnungswesen, Steuerberatung
- Lehrende und ausbildende Berufe



Data Science

Risk Management

KI

Software development

...

[M. Dieter, G. Töner 2014]

“Master’s degree in (business) mathematics or a comparable course with a quantitative focus”

“Successfully completed university degree in engineering, physics, mathematics or a comparable course, preferably with a doctorate”

as a master’s graduate

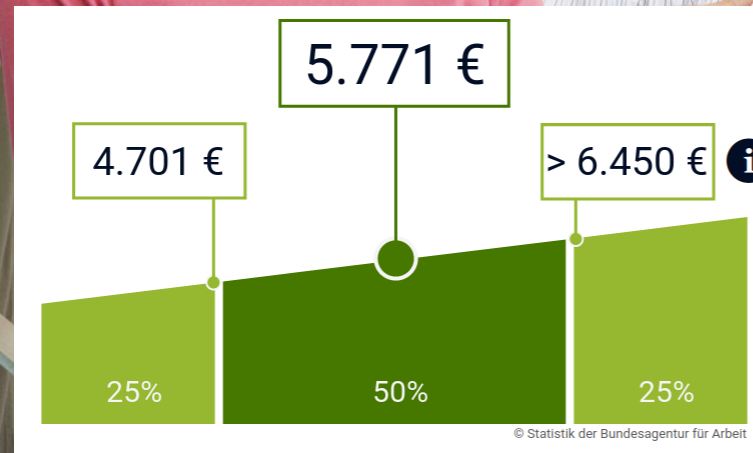
- Career option in senior management
- scientific tasks
- 94% adequately employed

[Bericht BfA, April 2019]

2.3 percent
subject-specific
unemployment rate
(Report BfA – July 2021)

„**Unemployment**
usually only a
short-term
search phenomenon“

45,000 EUR
average starting salary
(berufstart.de)





Madlyn Senkyr, M.Sc.
Master Mathematik (2022)

Junior Consultant at Group Controlling
Evonik Industries AG

... I work in a department that takes care of the planning/forecasting of individual business lines. This involves feeding AI-driven planning models with data on end market growth, trends in price and volume development and thus providing a forecast of the company's economic development in the future.

Sometimes colleagues come around the corner with "undefined" problems, and I am **able to ask the right questions** to give the problem the right form and structure with which it can then be solved.



Willi Sontopski, M.Sc.
Master Mathematik (2020)

Softwareentwickler (Senior)



Especially in requirements analysis, mathematical thinking is incredibly valuable to me since it helps me a lot in solving real problems **by means of mathematical abstraction**. Of course, mathematics is also enormously helpful in software development - not only when algorithms or performance are concerned. **Structured thinking** helps in programming and especially in the creation of automated software tests because there are also many special cases to consider in this area.



Dr. rer. nat. **Mario Varga**
Promotion Mathematik (2019)

Credit Risk Analyst
Santander Consumer Bank

At Santander Bank, I work in a team that specialises in credit risk. In particular, we develop models for predicting and estimating credit default and loss. We often use data-based approaches, statistical methods and machine learning.

During my studies, I developed a good intuition for mathematical models and their practical applications, which helps me a lot in my professional life. In the fields of data science and AI, both of which are highly popular and in demand, mathematical understanding is essential. Above all, **analytical thinking and the ability to simplify complex problems** are important skills that make any job easier.



Dipl.Math. **Sebastian Schlenkrich**
Diplom Mathematik (2004)

Unternehmensberater (Principal)
d-fine: Managementberatung



d-fine

"A lot of the content in my projects is based on financial mathematical models. In addition, various numerical methods are used to implement the models. This way, I can always apply and further develop the knowledge obtained in my studies.

In addition, the **analytical and structured approach** to problems that I have learned helps me with various aspects of project work."

Questions? Postgraduate Student Advisor

Dr. Vadim Alekseev

studienfachberatung-ma.math@tu-dresden.de



<https://tud.link/jk9c>

Jun.-Prof. Dr. Markus Schmidtchen

