



Michał Mika

Dr.-Ing. · Computational Mechanics · High-Performance Computing

Computational engineer specializing in modern, matrix-free, highly efficient and scalable simulation methods · From mathematical modeling through method development, implementation and verification to industrial validation.

7

PUBLICATIONS

14

CONFERENCE CONTRIBUTIONS

5

COURSES TAUGHT

6

YEARS IN RESEARCH

- FEM
- Fluid & Solid Mechanics
- Isogeometric Analysis
- Matrix-Free Methods
- Machine Learning
- HPC
- Software Development
- Risk & Reliability Analysis

PROFESSIONAL EXPERIENCE

- since 04/2026

Postdoctoral Researcher
Institute of Mechanics · Technical University of Darmstadt
Cut-cell quadrature · High-order explicit shell dynamics · 3D bioprinting & PIV
- 01/2022 – 03/2026

Research Associate
Institute of Mechanics · Technical University of Darmstadt
Doctoral research on matrix-free isogeometric methods · Responsibility for IT services, network architecture, hardware/software support, and procurement, and budget ownership · Design and teaching of university courses and seminars · Student supervision
- 04/2020 – 12/2021

Research Associate
Institute of Mechanics and Computational Mechanics · Leibniz University Hannover
Stochastic methods · Risk and reliability analysis
- 04/2017 – 10/2018

Intern
Dr. Ing. h.c. F. Porsche AG · Stuttgart
Validation of electrochemical simulations for cathodic electrodeposition coating.

EDUCATION

- 2022 – 2026

Dr.-Ing. Computational Mechanics
Technical University of Darmstadt
Dissertation on matrix-free tensor-product spline methods for isogeometric scientific computing. Final grade: very good.
- 04/2019 – 10/2019

Research Stay Abroad
Oden Institute · University of Texas at Austin · USA
Collaboration with Prof. T. J. R. Hughes on collocation methods for integral equations.
- 2018 – 2020

M.Sc. Computational Methods in Engineering
Leibniz University Hannover
Thesis on efficient Galerkin methods for random fields. Final grade: with distinction.
- 2014 – 2018

B.Sc. Computational Engineering
Leibniz University Hannover
Industry thesis at Dr. Ing. h.c. F. Porsche AG on inductively pre-gelled adhesives in thermomechanical simulations of body-in-white shells.

SELECTED PUBLICATIONS

- 2026 · Computer Methods in Applied Mechanics and Engineering

A data-driven approach to cut-cell quadrature using spline interpolation. [↗](#)
M. Mika, R. R. Hiemstra, S. K. F. Stoter, D. Schillinger.
- 2026 · Journal of Scientific Computing

Matrix-free inexact preconditioning techniques for isogeometric tensor-product discretizations. [↗](#)
M. Mika, R. R. Hiemstra, D. Schillinger.
- 2021 · Computer Methods in Applied Mechanics and Engineering

A matrix-free isogeometric Galerkin method for Karhunen–Loève approximation of random fields. [↗](#)
M. Mika, T. J. R. Hughes, D. Schillinger, P. Wriggers, R. R. Hiemstra.

+ 4 more peer-reviewed publications · 14 conference contributions (ECCOMAS, IGA, GAMM, SIAM UQ) · Full publication list, source codes, and supplementary results at <https://mika.sh/>.

CONTACT

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WEB
<https://mika.sh/>

LOCATION
Darmstadt, Germany

DATE OF BIRTH
20 Aug 1995

LANGUAGES

German

●●●●●

English

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Polish

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SOFT SKILLS

- Communication
- Empathy
- Perspective-Taking
- Agile
- Scrum
- Planning & Organization

PROGRAMMING LANGUAGES

- Julia
- MATLAB
- C/C++
- Python
- Lua
- HTML/CSS
- SQL
- PHP

TOOLS

- GNU/Linux
- Git
- TDD
- Agentic Workflows
- N8N
- CI/CD
- Docker
- Proxmox

TEACHING & PERSONAL TRAINING

Course Design & Teaching · 3× Finite Element Methods · 2× Finite Difference Methods · Seminars.

CREATOR Autumn School 2024 · “Isogeometric Analysis” (IGA).

ACM Europe Summer School 2023 · “HPC Computer Architectures for AI and Dedicated Applications”.

AWARDS & SCHOLARSHIPS

- 2021 Förderpreis, Victor Rizkallah Foundation
- 2019 PROMOS Scholarship (BMBF)
- 2016 Germany Scholarship (BMBF)

INTERESTS

Smart Home · Automation · Coffee · Guitar (Studio & Stage) · Health