Jannick **Wolters**

Applied Mathematician

About me

I am currently living in the beautiful city of Aachen, working on my Ph.D. at Karlsruhe Institute of Technology.
During my studies I developed a passion for solving complex real world problems from the realm of transport equations on modern HPC architectures.
Being a quick learner and reliable team player, I have successfully been working on a wide range of problems with fellow Ph.D. students as well as industry partners.
As I am now close to finishing my Ph.D. in late October, I am looking forward to work on new and exiting topics.

Personal

Jannick Wolters
Aachen, Germany
31 years old

Interests

CFD simulations
GPU Accelerators
Machine Learning
High Performance Computing
Cloud Computing
Data Science
Teaching

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WORK EXPERIENCE

03/2018 – 05/2021
Research Scientist
Karlsruhe Institute of Technology
Steinbuch Centre for Computing (SCC)
Computational Science and Mathematical Methods (CSMM)

03/2017 – 05/2020
EFRE.NRW Project: ZEBRA
Karlsruhe Institute of Technology & AiNT GmbH
R&D Project to develop an innovative measurement system for non-destructive elemental analysis of raw materials and contaminated sites based on PGNAA.
Role: Method development and FEM transport solver implementation

04/2017 – 03/2018
Research Scientist
RWTH Aachen
Center for Computational Engineering Science (MathCCES)
Simulation in Nuclear Technology

10/2015 – 04/2017
Student research and teaching assistant
RWTH Aachen University
Research: 'Fully coupled MHD-simulations in OpenFOAM'
Teaching: 'Partial differential equations'

10/2013 – 03/2014
Research Internship
ABB Switzerland Ltd. Research Center Baden
Subject: 'Power Device Simulations in OpenFOAM'

AREAS OF EXPERTISE

MATHEMATICS

Topics

- Transport equations
    - Boltzmann
    - Navier-Stokes
    - Magnetohydrodynamics
- Uncertainty Quantification
- Inverse Problems
- (Bayesian) Statistics
- Data Science

Numerical Analysis

- Finite Volume Method
- Finite Element Method
- Sparse Reconstruction
- Continuous Optimization
- Krylov Subspace Solver
- High-dimensional Integration

COMPUTER SCIENCE

Languages

C++	▓▓▓▓▓▓▓▓▓
Python	▓▓▓▓▓▓▓▓
Matlab	▓▓▓▓▓▓
julia	▓▓▓▓
R	▓▓

High Performance Computing

- MPI / OpenMP / OpenACC
- PETSc / Eigen

Machine Learning

- Tensorflow
- Keras

SOFTWARE PACKAGES

- FEniCS
- OpenFOAM
- deal.ii
- OpenMC
- Gmsh
- Paraview

EDUCATION

03/2018 – 10/2021	**Mathematics** PH.D. STUDENT · Karlsruhe Institute of Technology Steinbuch Centre for Computing (SCC) Computational Science and Mathematical Methods (CSMM) Thesis: 'Uncertainty Quantification for the Evaluation of PGNAA Spectra' Supervisor: Prof. Dr. Martin Frank
03/2017 – 05/2020	**Mathematics** PH.D. STUDENT · RWTH Aachen University Center for Computational Engineering Science (MathCCES) Supervisor: Prof. Dr. Martin Frank Note: Continued at KIT
04/2015 – 03/2017	**M.Sc. Computational Engineering Science** STUDENT · RWTH Aachen University Thesis: 'Uncertainty Quantification for Wind Farm Models' Supervisor: Prof. Dr. Martin Frank
10/2010 – 03/2015	**B.Sc. Computational Engineering Science** STUDENT · RWTH Aachen University Thesis: 'MHD Simulations in OpenFOAM' Supervisor: Prof. Dr. Manuel Torrilhon

MANAGEMENT ABILITIES

Projects
- EU / state NRW funded three year project in very close collaboration with external company
- Research group projects with multiple Ph.D. students

Students
- Supervised 5 successful Master theses
- Topics: Machine Learning (3), Data Science (1), Inverse Problems (1)

Social
- Active member of the SIAM Student Chapter Aachen (2017 - 2020)

SOFT SKILLS (TOP 3)

- Determination & Persistence
- Teamwork
- Solution-Oriented Thinking

OTHER VALUABLE SKILLS

- Fluent in German & English
- Expert level Linux user
- SCRUM / Agile Development
- Versioning systems GIT / SVN
- Teaching (University lectures & exercises)
- Docker / containerd
- LaTeX, Markdown & MS-Office

PUBLICATIONS

2021	**Sparse signal reconstruction for prompt gamma neutron activation analysis** J. WOLTERS, K. KRYCKI, M. FRANK In progress
2021	**Uncertainty quantification of offshore wind farms using Monte Carlo and sparse grids** P. RICHTER, J. WOLTERS, M. FRANK Journal of Energy Sources, Part B: Economics, Planning, and Policy
2021	**Entropy–based methods for uncertainty quantification of hyperbolic conservation laws** M. FRANK, J.KUSCH, J. WOLTERS Springer International Publishing
2020	**Intrusive acceleration strategies for uncertainty quantification for hyperbolic systems of conservation laws** J.KUSCH, J. WOLTERS, M. FRANK Journal of Computational Physics

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