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

@ mail@jannick-wolters.de\(\) jannick-wolters.de



in in/jannick-wolters

profile/jannick_wolters

WORK EXPERIENCE

03/2018

Research Scientist

- 05/2021

Karlsruhe Institute of Technology

Steinbuch Centre for Computing (SCC)

Computational Science and Mathematical Methods (CSMM)

03/2017

EFRE.NRW Project: ZEBRA

- 05/2020

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

Research Scientist

- 03/2018 | 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

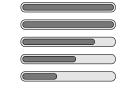
Languages

C++

Python

Matlab julia

R



High Performance Computing

- MPI / OpenMP / OpenACC
- · PETSc / Eigen

Machine Learning

- Tensorflow
- Keras

SOFTWARE PACKAGES

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

EDUCATION

- 10/2021

03/2018

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

Mathematics

- 05/2020 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 (2), Data Science (2), 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
- (University lectures & exercises)

Teaching

- · 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

@ mail@jannick-wolters.de

jannick-wolters.dejawolters

in in/jannick-wolters

profile/jannick_wolters