# 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

## Portfolio

- jannick-wolters.de
- jawolters

## Contact

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# Work Experience

# 03/2018

#### **Research Scientist**

- 04/2021

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
- · Monte-Carlo Simulation

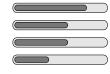
## COMPUTER SCIENCE

## Languages

C++ Python

Matlab julia Fortran

R



## High Performance Computing

- · MPI / OpenMP / OpenACC
- · PETSc / Eigen

#### Machine Learning

- Tensorflow
- Keras

# SOFTWARE PACKAGES

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

## EDUCATION

03/2018

**Mathematics** 

- 10/2021

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 (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
- (University lectures & exercises)

Teaching

- · Docker / containerd
- · LaTeX, Markdown & MS-Office

# **PUBLICATIONS**

2021

2020

Sparse signal reconstruction for prompt gamma neutron activation analysis

J. Wolters, K. Krycki, M. Frank

In progress

Portfolio

2021 Uncertainty quantification of offshore wind farms using Monte Carlo and sparse grids

P. RICHTER, J. WOLTERS, M. FRANK

In revision, 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

Intrusive acceleration strategies for uncertainty quantification for hyperbolic systems of conservation laws

J.Kusch, J. Wolters, M. Frank Journal of Computational Physics

Contact

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