Martin Stoll

Personal

Date of birth:
Nationality:

Education

2016 **Dr. rer. nat. habil.** , *University of Magdeburg*, Magdeburg.
Topic: Fast iterative solvers for time-dependent PDE-constrained optimization problems

2005–2008 **Ph.D (DPhil)** , *University of Oxford*, Oxford.
Topic: Solving linear systems involving the adjoint
Supervisor: Dr. Andy Wathen

2000–2005 **Dipl. Math.**, *Technische Universität Chemnitz*, Chemnitz.
Topic: Purging und Locking für den Hamiltonian Lanczos Prozess
Supervisor: Prof. Dr. Peter Benner

Employment history

from October 2017 **Full Professor**, *Scientific Computing, TU Chemnitz, Chemnitz, Germany*.

July 2013– September 2017 **Research Group Leader (W2)**, *Numerical Linear Algebra for Dynamical Systems, Max Planck Institute for Dynamic of Complex Technical Systems, Magdeburg, Germany*.

October 2010 – July 2013 **Postdoctoral research fellow**, *Computational Methods in Systems and Control Theory, Germany*.

October 2008 – September 2010 **Postdoctoral researcher**, *Oxford Centre for Collaborative Applied Mathematics, University of Oxford, UK*.

October 2005 – September 2008 **Ph.D student**, *Numerical Analysis Group, University of Oxford, UK*.

Research interest

General Numerical Analysis in particular Numerical Linear Algebra and Matrix Computations

Optimization with partial differential equation (PDE) constraints
Preconditioning for variational inequalities with constraints
Fast solvers for phase-field problems
Saddle point problems from flow simulation and optimization
Iterative solvers for linear systems, Krylov subspace methods, Preconditioning
Eigenvalue problems, Krylov subspace methods

Fractional Differential Equations
Singular Value decomposition, truncated SVD
Scientific Computing, robust algorithms

Teaching Experience

Lectures

Numerical Linear Algebra for eigenvalue problems, (twice joint with Peter Benner), University of Magdeburg, (2011, 2012, 2014)
Numerical Linear Algebra for linear systems and matrix equations, University of Magdeburg, (2011, 2013, 2015)
Numerical Linear Algebra, Oxford, (stand in: 2006, 2007)
Introduction to Matlab, Oxford, (2008)

Seminars

Ranking and Clustering Algorithms (2014)

Classes

Numerical Linear Algebra, Oxford, (2006, 2007, 2008,2009)
Numerical Analysis, Oxford, (2006, 2007, 2008, 2009)
Introduction to Matlab, Oxford, (2008)

Languages

German (mother tongue), English (fluent)

Misc

- Referee for journals: BIT, Numerical Algorithms, SIMAX, LAA, Computers & Mathematics with Applications, Computing, SISC, Optimization Methods and Software, IMA Journal for numerical analysis, Journal of Applied Mathematics and Computing, Journal of Computational Physics, International Journal of Computer Mathematics, Mathematics of Computation, Numerical Algebra, Control and Optimization, SIOPT, Journal of Engineering Mathematics, IFAC, SINUM, Chemical Engineering Science
- Referee for grants: STW, DAAD
- 2015 Member of Scientific committee Enumath 2015, Ankara
- 2015 Co-Organizer for minisymposium at Preconditioning 2015, Eindhoven
- 2015 Invited Co-Organizer for minisymposium at Enumath meeting 2015, Ankara,
- 2014 Invited Co-Organizer for minisymposium at SIAM annual meeting 2014, Chicago,
- 2013 Invited Co-Organizer for minisymposium at ICCOPT 2013, Lisbon,
- 2013 Invited Co-Organizer for focus session at EUCCO 2013, Chemnitz,
- 2012 Co-Organizer for minisymposium at SIAM ALA 2012, Valencia
- 2012 Invited Co-Organizer for minisymposium at GAMM Annual meeting 2012, Darmstadt,
- 2011 Organizer of Model Order Reduction Workshop between MPI Magdeburg and RWTH Aachen, Magdeburg
- 2010 Organizer of Workshop “Design, Optimization and Control” in Oxford (25 000 pounds)
- 2011 Co-organizer minisymposium at SIAM optimization conference
- 2010 Co-organizer minisymposium at IMA Conference on numerical linear algebra and optimization
- 2010 Co-organizer young researchers minisymposium at GAMM annual meeting in Karlsruhe
- 2009 Co-organizer minisymposium at SIAM annual meeting in Denver
- 2009 Co-organizer minisymposium at Biennial Numerical Analysis conference in Glasgow
- 2008-2010 Publisher of OCCAM Technical Reports

- 2007 Main Organizer Postgraduate Symposium at Oxford
- 2007 Publisher of Numerical Analysis Group Technical Reports

Supervision

PhD Akwum Onwunta (OvGU), starting June 2012, PhD student, *Fast solvers for parabolic PDEs with stochastic coefficients.* joint with Prof. Peter Benner

PhD Jessica Bosch (OvGU), starting January 2013, PhD student , *Fast iterative solvers for modified and coupled Cahn-Hilliard problems*

PhD Wei Zhao (OvGU), starting September 2014, PhD student , *Fast iterative solvers non-local differential equations*

Postdoc Hamdullah Yücel (MPI Magdeburg), September 2012-September 2015, *Discontinuous Galerkin methods for PDE-constrained optimization problems with reaction-advection diffusion equations* joint with Prof. Peter Benner (now permanent position METU)

Postdoc Andrew Barker (MPI Magdeburg), January 2013-January 2014, *HPC for time-dependent PDE-constrained optimization problems* (now permanent scientist at Lawrence Livermore Laboratory)

Postdoc Sergey Dolgov (MPI Magdeburg), October 2014-present, *Fast tensor methods and applications* joint with Prof. Peter Benner

Grants

Grant for workshop with 25 participants "Design, Optimization and Control" University of Oxford, (25 000 pounds)

ESF OPTPDE Visiting Grant, joint with John Pearson, University of Oxford for a 2-month visit

3 month exchange via Oxford Visiting Student Grant, joint with Jessica Bosch for collaborative work with David Kay (Computational Biology) and Andy Wathen (Numerical Analysis), Oxford Centre for Collaborative Applied Mathematics, UK

Centre for Dynamical Systems, Magdeburg. Grant for one researcher position for the years 2013-2015 funded by the State of Saxony Anhalt. (150000 Euro)

Currently under review: DFG Sachbeihilfe ,Grant for PhD student working on the phase field simulation of biomembranes

Theses

[1] M. Stoll, Locking and purging for the Hamiltonian Lanczos process, Diploma Thesis, TU Chemnitz, 2005.

[2] M. Stoll, Solving Linear Systems using the Adjoint, DPhil (PhD) Thesis, University of Oxford, 2009.