# Aretha Leonore Teckentrup

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## PERSONAL

**Date of birth**                                    **Nationality**
29 January 1986                                    German

## WORK EXPERIENCE

**Postdoctoral Research Associate in Scientific Computing.**
*Florida State University.* July 2013 - present.

Adviser: Prof Max Gunzburger

Research topics include stochastic collocation methods for differential equations with random coefficients and sparse grid interpolation.

**Teaching Assistant**, *University of Bath,* October 2008 - June 2013.

Responsibilities included planning and giving weekly 1-hour tutorials on undergraduate lecture material and set exercises, as well as marking weekly homework.

## EDUCATION

**PhD Mathematics. Thesis title:  *Multilevel Monte Carlo methods and uncertainty quantification.***
*University of Bath, UK.* October 2009 - June 2013.

Supervisor: Prof Robert Scheichl

*Funded by an EPSRC doctoral training grant (3.5 years)*

My research focused on the development and convergence analysis of multilevel Monte Carlo methods for partial differential equations with random coefficients. Achievements of the thesis include a detailed regularity analysis of elliptic equations with coefficients that cannot be uniformly bounded in the random parameter, and a new multilevel version of a Markov chain Monte Carlo algorithm.

**MMath Mathematics** (with first class honours)
*University of Bath, UK.* October 2005 - June 2009.

**International Baccalaureate Diploma** (with 42 out of 45 points)
*St. Olav Videregående Skole, Stavanger, Norway.* August 2003 - June 2005.

## SKILLS

**Languages**
English, German, Norwegian (fluent)

French (intermediate), Japanese, Spanish (beginners)

**IT Skills**
Proficient programming in Fortran90/95, C/C++, MATLAB, R.

Experience with MPI, OpenMP, CUDA C.

## PUBLICATIONS

C. Ketelsen, R. Scheichl, A.L. Teckentrup. *A hierarchical multilevel Markov chain Monte Carlo algorithm and applications to uncertainty quantification in subsurface flow.* Submitted, March 2013.

A.L.Teckentrup. *Multilevel Monte Carlo methods for highly heterogeneous media*. Proceedings of the Winter Simulation Conference 2012.

A.L.Teckentrup, R. Scheichl, M.B. Giles and E. Ullmann. *Further Analysis of Multilevel Monte Carlo Methods for elliptic PDEs with random coefficients*. Numerische Mathematik, published online 12 March 2013.

J. Charrier, R. Scheichl and A.L. Teckentrup. *Finite Element Error Analysis of Elliptic PDEs with Random Coefficients and its Application to Multilevel Monte Carlo Methods*. SIAM Journal on Numerical Analysis, 51(1):322-352, 2013.

K.A. Cliffe, M.B. Giles, R. Scheichl and A.L. Teckentrup. *Multilevel Monte Carlo Methods and Applications to Elliptic PDEs with Random Coefficients*. Computing and Visualization in Science, 14(1):3-15, 2011.

## SELECTED PRESENTATIONS

- (invited) *Multilevel Monte Carlo for PDEs with random coefficients*, ICMS workshop on Uncertainty Quantification, Edinburgh (UK), 25 May 2010.
- *Monte Carlo methods for PDEs with random coefficients*, Numerical Analysis seminar series, University of Bath (UK), 17 December 2010.
- (invited) *Multilevel Monte Carlo for highly heterogeneous media*, International Conference on Large-Scale Scientific Computations (LSSC'11), Sozopol (Bulgaria), 7 June 2011.
- *Multilevel Monte Carlo for elliptic PDEs with random coefficients*, Lawrence Livermore National Laboratory (LLNL), Livermore (CA, USA), 1 September 2011.
- *Multilevel Monte Carlo for highly heterogeneous media*, 24th Biennial Conference on Numerical Analysis, University of Strathclyde (UK), 29 June 2011.
- (invited) *Multilevel Monte Carlo for elliptic PDEs with log–normal random coefficients*, Monte Carlo and Quasi–Monte Carlo methods in Scientific Computing (MCQMC'12), University of New South Wales (Sydney, Australia), 5 February 2012.
- *Multilevel Markov chain Monte Carlo algorithms and applications to uncertainty quantification in groundwater flow*, Numerical Analysis seminar series, University of Bath (UK), 12 October 2012.
- (invited) *Multilevel Monte Carlo for highly heterogeneous media*, Winter Simulation Conference 2012, Berlin (Germany), 11 December 2012.
- *Multilevel Monte Carlo methods for uncertainty quantification in subsurface flow*, Data Assimilation Research Centre (DARC) Seminar, University of Reading (UK), 23 May 2013.
- (invited) *Multilevel Markov chain Monte Carlo algorithms for uncertainty quantification in subsurface flow*, Conference on the Mathematics of Finite Elements and Applications (MAFELAP '13), Brunel University (UK), 14 June 2013.

**RESEARCH VISITS**

- Partially funded visit to Professor Panayot Vassilevski at the Lawrence Livermore National Laboratory in Livermore (CA, USA), August 27 - September 11, 2011.

- Fully funded participation in the *RICAM Special Semester on Multiscale Simulation & Analysis in Energy and the Environment* at the RICAM in Linz (Austria), October 3–December 16, 2011.

- Fully funded visit to Professor Panayot Vassilevski at the Lawrence Livermore National Laboratory in Livermore (CA, USA), July 08 - August 05, 2012.

**REFERENCES**

Prof Robert Scheichl (PhD supervisor)
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