Alexander V. Mamonov *Curriculum Vitae*

CONTACT INFORMATION

Institute for Computational Engineering and Sciences
ACE building, room 3.314
201 East 24th St. Stop C0200
Austin, TX 78712-1229 USA

Cell: +1 (713) 299-9832
Office: +1 (512) 232-7454
E-mail: mamonov@ices.utexas.edu
mamonov@gmail.com
Web: http://users.ices.utexas.edu/~mamonov/

RESEARCH INTERESTS

Inverse problems: elliptic and parabolic problems, ill-posed problems, electrical impedance tomography, hybrid methods, resistor networks, optimal grids, partial and incomplete data. Model reduction: non-linear model reduction based on optimal grids, rational approximation and interpolation. Numerical linear algebra: preconditioning of large sparse linear systems arising from the discretization of PDEs, large-scale parallel computing.

EDUCATION

Rice University,
Department of Computational and Applied Mathematics (CAAM)
Ph.D. **April, 2009 - July, 2010**
Advisor: Prof. Liliana Borcea
Thesis title "Resistor networks and optimal grids for the numerical solution of electrical impedance tomography with partial boundary measurements".
Master of Arts **August, 2005 - April, 2009**

Lomonosov Moscow State University,
Department of Mechanics and Mathematics, Mechanics of Composites
Diploma with Distinction **September, 1998 - June, 2003**
Equivalent to Master of Arts, Summa cum laude.

PROFESSIONAL EXPERIENCE

University of Texas at Austin,
Institute for Computational Engineering and Sciences
Postdoctoral fellow (Austin, TX) **January, 2011 - Present**

Mathematical Sciences Research Institute,
Inverse Problems and Applications Program
Postdoctoral fellow (Berkeley, CA) **August, 2010 - December, 2010**

Schlumberger Abingdon Technology Center,
Reservoir Gridding Group
Intern (Abingdon, UK) **May, 2008 - August, 2008**

Schlumberger Doll Research Center,
Mathematics and Modeling Department, Uncertainty, Risk, and Optimization Program
Intern (Cambridge, MA) **May, 2009 - July, 2009**
Intern (Cambridge, MA) **May, 2007 - August, 2007**
Intern (Ridgefield, CT) **May, 2006 - August, 2006**

Lebedev Institute of Precision Mechanics and Computer Engineering
of the Russian Academy of Sciences, Moscow, Russia
Junior Research Scientist **October, 2004 - August, 2005**
Senior Laboratory Assistant **February, 2002 - January, 2004**

Teaching Experience

Rice University, CAAM
Teaching Assistant **August, 2005 - May, 2006**

TA for graduate (CAAM 401-402 Analysis, CAAM 540 Functional Analysis) and undergraduate (CAAM 336 PDEs) courses. Weekly recitation sessions, office hours, solution writing, homework and exam grading.

Publications

- *Point source identification in non-linear advection-diffusion-reaction systems.* A.V. Mamonov and Y.-H. R. Tsai, submitted 2012. Preprint: arXiv:1202.2373 [math-ph]
- *Study of noise effects in electrical impedance tomography with resistor networks.* L. Borcea, F. Guevara Vasquez and A.V. Mamonov, submitted 2011. Preprint: arXiv:1105.1183 [math-ph]
- *Pyramidal resistor networks for electrical impedance tomography with partial boundary measurements.* L. Borcea, V. Druskin, A.V. Mamonov and F. Guevara Vasquez, Inverse Problems 26(10):105009, 2010. doi:10.1088/0266-5611/26/10/105009
- *Circular resistor networks for electrical impedance tomography with partial boundary measurements.* L. Borcea, V. Druskin and A.V. Mamonov, Inverse Problems 26(4):045010, 2010. doi:10.1088/0266-5611/26/4/045010

Proceedings

- *Optimal Grid Coarsening: A Fast Proxy for Large Reservoir Optimization.* A.V. Mamonov, B. Couet, W.J. Bailey, M. Prange, H.A. Djikpesse and V. Druskin, SPE/EAGE Reservoir Characterization and Simulation Conference, Abu Dhabi, UAE, October 2007. doi:10.2118/111378-MS

Book Chapter

- *Resistor network approaches to electrical impedance tomography.* L. Borcea, V. Druskin, F. Guevara Vasquez and A.V. Mamonov, Accepted to Inside Out, Mathematical Sciences Research Institute Publications, 2011. Preprint: arXiv:1107.0343 [math-ph]

Conference and Seminar Presentations

- Applied Mathematics Seminar, University of Utah, March 2012.
- Pan-American Advanced Studies Institute - Inverse Problems and PDE Control (PASI-CIPPDE), Santiago, Chile, January, 2012.
- AMS Western Section meeting, University of Utah, Salt Lake City, October, 2011.
- Workshop on Computational Aspects in Medical Imaging, University of British Columbia, Vancouver, Canada, October, 2011.
- Workshop on Inverse Problems, Texas A&M University, College Station, October 2011.
- 7^{th} International Congress on Industrial and Applied Mathematics (ICIAM 2011), Vancouver, Canada, July 2011.
- DTRA/NSF Algorithms Workshop (poster), Boston, MA, June 2011.
- Applied Inverse Problems Conference, Texas A&M University, College Station, May 2011.
- Applied Mathematics/Physics Seminar, University of California, Merced, March 2011.
- IAMCS Workshop in Large-Scale Inverse Problems and Uncertainty Quantification (poster), Texas A&M University, College Station, February 2011.
- Inverse Problems: Theory and Applications, MSRI, Berkeley, CA, November 2010.
- Summer School on Computational Solution of Inverse Problems (FICS), University of Helsinki, Finland, July 2010.
- Computational and Mathematical Methods in Science and Engineering, University of Wisconsin-Madison, May 2010.
- SIAM Conference on Imaging Science, Chicago, IL, April 2010.
- Material Research Society Spring meeting (poster), San Francisco, CA, April 2010.
- Texas Applied Mathematics Meeting for Students, University of Houston, TX, March 2010.

- SIAM Conference on Analysis of Partial Differential Equations, Mesa, AZ, December 2007.

Awards

- SIAM ICIAM 2011 travel award.
- DTRA/NSF 2011 Algorithms Workshop travel award.
- Applied Inverse Problems Conference 2011 travel award.
- Second Place, Robotics Contest, Festival International des Sciences et Technologies, Vierzon, France, 2000.

Computer Skills

- Languages: proficient with C/C++, Matlab (GNU Octave) language, Intel MCS51 assembly language, working knowledge of C#.
- Standard numerical packages: BLAS, LAPACK, etc.
- Software development: MS Visual Studio (C++/C#), GCC.
- Algorithms: numerical PDEs (FD, FE, DG), inverse problems, numerical optimization (discrete and continuous), large-scale linear algebra: parallel solvers (direct and iterative), preconditioners, real-time control and networking.
- Parallel computing: experienced with MPI on GNU/Linux PC clusters.
- Operating Systems: GNU/Linux, MS Windows.

Languages

English (fluent), Russian (native).