

Shari Moskow

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Department of Mathematics

Drexel University, 3141 Chestnut Street, Philadelphia, PA 19104

EDUCATION Rutgers University, Applied Mathematics, Ph. D., 1996
Pennsylvania State University, Mathematics, B.S., 1991.

ACADEMIC POSITIONS 1996–1998: , NSF GOALI Industrial Postdoctoral Associate,
University of Minnesota and Schlumberger-Doll Research
1999(Jan.-June): Chargé de Reserche, Ecole Polytechnique, France
1998–2003: Assistant Professor, University of Florida
2003–2007: Associate Professor, University of Florida
2006-2007: Visiting Associate Professor, Rice University,
Department of Computational and Applied Mathematics
2007-present: Associate Professor, Drexel University

EXTERNAL FUNDING

- 2006-2009: NSF DMS Grant, “ Asymptotics at Resonant Scales: Applications to inhomogeneous material simulation, discretization and inversion. “ \$ 192,451.
- 2006-2008: NSF DMS Grant (with T. Davis, J. Gopalakrishnan, W. Hager and B. Mair) “SCREMS: Developing computational mathematics at the University of Florida.” \$ 81,000.
- 2006: Schlumberger-Doll Research consulting: “Optimal grids for anisotropic problems. II. Wave Propagation.” \$ 6,000.
- 2005: Schlumberger-Doll Research consulting: “Optimal grids for anisotropic problems.” \$ 5,000.
- 2003-2004 NSF DMS Grant, (with Y. Chen, T. Davis, J. Gopalakrishnan and W. Hager) “University of Florida 2003/2004 Special Year in Mathematics.” \$ 30,000
- 2000–2003: NSF DMS Grant, “ Asymptotic Expansions, Inverse Problems and Homogenization of Boundary Values.” \$ 62,542
- 1999–2002: NSF DIP Travel Grant, (with G. Bao and W. Hager), “ Modeling and Optimal Design in Micro-Optics” \$ 15,000

PUBLICATIONS:

1. S. MOSKOW AND M. VOGELIUS, *First order corrections to the homogenized eigenvalues of a periodic composite medium: A convergence proof*, Proceedings of the Royal Society of Edinburg, **127A**(1997), 1263-1299.

2. S. MOSKOW AND M. VOGELIUS, *First order corrections to the homogenized eigenvalues of a periodic composite medium: The case of Neumann boundary conditions*, Indiana Math. Journal, accepted.
3. S. MOSKOW, *An analysis of eigenvalue problems for periodic composites*, Ph.D. thesis, Rutgers University, 1996.
4. D. J. CEDIO-FENGYA, S. MOSKOW AND M. VOGELIUS, *Identification of conductivity imperfections of small diameter by boundary measurements: Continuous dependence and computational reconstruction*, Inverse Problems, **14** (1998), pp. 553-595.
5. S. MOSKOW, V. DRUSKIN, T. HABASHY, P. LEE, AND S. DAVYDYCHEVA, *A finite difference scheme for elliptic equations with rough coefficients using a cartesian grid nonconforming to interfaces*, SIAM J. Num. Anal., **36**, No. 2 (1999) pp. 442-464.
6. V. DRUSKIN AND S. MOSKOW *Three-Point Finite Difference Schemes, Padè and the Spectral Galerkin Method: I. One-sided Impedance Approximation*, Math. Comp., **71** (2002), pp. 971-994.
7. H. AMMARI, S. MOSKOW AND M. VOGELIUS *Boundary Integral Formulae for the Reconstruction of Electric and Electromagnetic Inhomogeneities of Small Volume* ESAIM: Control Optim. and Calc. Var. **9** (2003) pp. 49-66.
8. H. AMMARI AND S. MOSKOW *Asymptotic Expansions for Eigenvalues in the Presence of Small Inhomogeneities*, Math. Meth. Appl. Sci. **26** (2003) no. 1, pp. 67-75.
9. H. AMMARI, E. LAKOVLEVA AND S. MOSKOW *Recovery of small inhomogeneities from the scattering amplitude at a fixed frequency*, SIAM J. Math. Anal. **34** (2003), no. 4, 882-900.
10. S. MOSKOW, F. SANTOSA AND J. ZHANG *An approximate method for scattering by thin structures*, SIAM J. Applied Math., **66**, no. 1, (2005) 187-205.
11. S. BHAT AND S. MOSKOW *Homogenization of a nonlinear elliptic boundary value problem modeling galvanic currents.*, SIAM MMS, **5**, no. 1, (2006) 149-169.
12. S. ASVADUROV, V. DRUSKIN AND S. MOSKOW *Optimal grids for anisotropic problems.*, ETNA, Electronic Transactions in Numerical Analysis, Volume 26, (2007) 55-81.
13. S. BHAT AND S. MOSKOW *Linearization of a nonlinear periodic boundary condition modeling galvanic currents.*, to appear, Journal of Computational Mathematics.
14. J. GOPALAKRISHNAN, S. MOSKOW, AND F. SANTOSA *Asymptotic approximation of the resonances of thin structures.*, submitted.
15. B. ASLAN, W. HAGER, AND S. MOSKOW *A generalized eigenvalue problem for the Laplacian.*, submitted.

SELECTED TEACHING

- 2006-2007: Rice University: Differential Equations for Engineers.
- 1998-present: University of Florida

- Graduate Courses: Finite Difference Methods, Finite Element Methods, Applied Partial Differential Equations, Numerical Analysis, Asymptotic Analysis.
- Undergraduate Courses: Numerical Analysis, Differential Equations, Calculus, Linear Algebra.
- 1992-1996: Rutgers University: Teaching Assistant: Calculus I,II,III, Dimacs Young Scholars Program in Discrete Mathematics.

GRADUATE STUDENTS

- Sujeet Bhat. Phd May 2006. Currently IMA postdoc.
- Adnan Sabuwala. Current Phd student.

SELECTED SERVICE 1998-present: University of Florida

- Co-creator and chapter advisor for SIAM Student Chapter 2002-2006.
- Chair, Graduate Admissions, 2003-2006.
- Graduate Admissions, 1998-2006.
- Steering (Executive) Committee, 2002-2004.
- Hiring Committee, 2000,2001,2003.
- Applied Math Seminar Organizer, 1998.
- Numerical Analysis Qualifying Exam Committee, 1998-2006.
- PDE Qualifying Exam Committee, 1998-2006.
- Teaching Innovations Committee, 2001-2002.

SELECTED TALKS

- *Approximate method for scattering and resonances of thin structures.*, AIP, Applied Inverse Problems, University of British Columbia, June 2007.
- *Approximate method for scattering and resonances of thin structures.*, Conference on Inverse Problems, Homogenization and Related Topics in Analysis on the occasion of Prof. Robert Gilbert's 75th birthday, July 13-15, 2007.
- *An approximate method for scattering by thin structures.*, Applied math seminar, McGill University, Montreal, Canada, 2006.
- *Optimal grids for anisotropic problems.* SIAM Annual Meeting in Boston, MA, 2006.
- *Targeted grid approximation for Neumann to Dirichlet maps.*, Colloquium, Rice University, Houston, TX, 2005.

- *An approximate method for scattering by thin structures.*, AMS Summer Research Conference, Mathematical Modeling of Novel Optical Materials and Devices, Snowbird, UT, 2005.
- *Optimal grids for anisotropic problems.* Schlumberger-Doll Research, Ridgefield, CT, 2005.
- *Targeted grid approximations for geophysical inversion*, AMS National Meeting in Atlanta, GA, 2005.
- *Optimal grids for anisotropic problems.*, SIAM Annual Meeting in Portland, Oregon, 2004.
- *Detection of small inhomogeneities from the scattering amplitude at a fixed frequency.* PDE Seminar, University of Minnesota, 2003.
- *Detection of small inhomogeneities from the scattering amplitude at a fixed frequency.* UCLA-IPAM, Applied Inverse Problems, Lake Arrowhead, CA, 2003.
- *Optimal grids for anisotropic problems*, Women in Applied Mathematics Research and Leadership Conference, University of Maryland, October 2003.
- *Homogenization of a nonlinear boundary value problem modeling galvanic currents.* Special Session on Applied Mathematics and Materials, Southeastern Sectional AMS Meeting, Louisiana State University, 2003.
- *Homogenization of a Nonlinear Boundary Value Problem Modeling Galvanic Currents.* Special Session on Bridges from Applied to Mathematics, Southeastern Sectional AMS Meeting, Georgia Tech University, 2002.
- *Three Point Finite Difference Schemes, Padé, and the Spectral Galerkin Method.* SIAM Anniversary Conference, Philadelphia, 2002.
- *Identification of Conductivity Imperfections of Small Diameter by Boundary Measurements.* PIERS (Progress in Electromagnetic Research Symposium), Boston, 2002.
- *Boundary correctors for periodic media.* Georgia Tech Applied Math Seminar, 2002.
- *Boundary correctors for periodic media.* Penn State Colloquium, 2002.
- *Identification of Conductivity Imperfections of Small Diameter by Boundary Measurements.* Workshop on Geometric Methods and Inverse Problems, July 2001, IMA, University of Minnesota.
- *Three Point Finite Difference Schemes, Padé, and the Spectral Galerkin Method.* Special Session on Waves in Heterogeneous Media, Sothwestern Sectional AMS Meeting, April 2001, University of Las Vegas.
- *Boundary correctors for periodic media.* International Conference on Homogenization and Materials Science, University of Akron, Akron, Ohio, 2000.
- *First order corrections to the homogenized eigenvalues of a periodic composite medium.* Seminar, Centre de Mathématiques Appliquées, Ecole Polytechnique, France, 2000.

CONFERENCES/MINISYMPOSIA ORGANIZED

- Minisymposium: Rational Approximation Methods for Optimization of Numerical Solutions to PDEs. SIAM 50th Anniversary and Annual Meeting, 2002. (with V. Druskin)
- Computational Methods in Multiscale Analysis and Applications. University of Florida, February 29-March 2, 2004. (with J. Gopalakrishnan and W. Hager)
- Special Session on Imaging, Homogenization and Shape Optimization, AMS Spring Southeastern Sectional Meeting, April, 2006. (with M. Vogelius).
- Co-Organizer: SIAM Conference on Analysis of PDEs, Mesa, Arizona, December 10-12, 2007.