

Curriculum Vitae

Louis F. Rossi

Education

- B.S.** Mathematics. Harvey Mudd College. 1988.
M.A. Mathematics. University of California Berkeley. 1990.
Ph.D. Applied Mathematics. University of Arizona. December 1993.
Dissertation: *A Spreading Blob Vortex Method for Viscous Bounded Flows.*
Advisor: B. J. Bayly.

Academic Employment

- Aug 2004-present** **Associate Professor**
Department of Mathematical Sciences
University of Delaware
- Jan 2001-Aug 2004** **Assistant Professor**
Department of Mathematical Sciences
University of Delaware
- 1996-Dec 2000** **Assistant Professor**
Department of Mathematical Sciences
University of Massachusetts Lowell
- 1994-1996** **NSF Postdoctoral Fellow**
Department of Engineering Sciences and Applied Mathematics &
Department of Mechanical Engineering
Northwestern University

Honors and Awards

- 2007** University of Delaware Outstanding Assessment Fellow Award
2005 University of Delaware Exemplary Use of Technology in Teaching Award, Honorable Mention
1999 Department of Mathematical Sciences Faculty Teaching Award, UMass Lowell
1993 SIAM Student Paper Prize
1988 Nominated to Sigma Xi

Service

- 2005-present** Associate Editor, SIAM Review (Education Section)
- 2006-present** Associate Editor, SIAM Undergraduate Research Online
- 2007-present** Panel reviewer, National Science Foundation
- 2006-present** Department of Mathematical Sciences Assessment Fellow
- 2008-present** Mathematical Sciences Assessment Committee. (Chair 2008-2009).
- 2008-2009** Chairman, Mathematical Biology Search Committee
- 2009** Sakai Learning Management System Committee
- 2009** Research Computing Task Force
- 2007-2009** Secretary /Treasurer, UD Chapter of Sigma Xi
- 2004-2006** Chairman, Mathematical Sciences Outreach Committee
- 2005-2006** President, UD Chapter of Sigma Xi
- 2004-2005** President-elect, UD Chapter of Sigma Xi
- 2005** Chairman and Organizing Committee, American Mathematical Society Eastern Section Meeting, University of Delaware.
- 2002-present** Member, Mathematical Problems in Industry Workshop Organizing Committee
- Ongoing** Journal referee, *American Journal of Physics*, *Journal on Computational and Applied Mathematics*, *Journal of Computational Physics*, *Journal on Fluid Mechanics*, *Journal on Non-Newtonian Fluid Mechanics*, *Physical Review E*, *SIAM Review* and *SIAM Journal on Applied Mathematics*.

- L. A. Barba, and **L. F. Rossi**. *Global field interpolation for particle methods*. Journal of Computational Physics, 229, pp. 1292-1310. 2010.
- R. B. Platte, **L. F. Rossi** and T. B. Mitchell. *Using global interpolation to evaluate the Biot-Savart integral for deformable elliptical Gaussian vortex elements*. SIAM Journal on Scientific Computing, 31 (2), pp. 2342-2360. 2009.
- T. B. Mitchell and **L. F. Rossi**. *The evolution of Kirchoff elliptic vortices*. Phys. Fluids 20, 054103-1 - 054103-12, May 2008.
- H. I. Inyang, **L. F. Rossi**., Graham-Eagle, J. and Pennell, S. *Modeling Smectite Illitization in Earthern Barriers of Buried Radioactive Wastes*. Geomechanics and Geoengineering: An International Journal 2 (2), pp. 87-95. 2007.
- L. F. Rossi**. *Evaluation of the Biot-Savart integral for deformable elliptical Gaussian vortex elements*. SIAM Journal on Scientific Computing 28 (4), pp. 1509-1532. 2006.
- L. F. Rossi**, Gareth McKinley and L. P. Cook. *Slippage and Migration in Taylor-Couette Flow of a Model for Dilute Wormlike Micellar Solutions*. Journal on Non-Newtonian Fluids 136 (2-3), pp. 79-92. 2006.
- K. Johnson and **L. F. Rossi**. *A mathematical and experimental study of ant foraging trail dynamics*. Journal of Theoretical Biology. 241 (2), pp. 360-399. 2006.
- L. F. Rossi**. *A Comparative Study of Lagrangian Methods Using Axisymmetric and Deforming Blobs*. SIAM Journal on Scientific Computing 27 (4), pp. 1168-1180. 2006.
- L. F. Rossi**. *Achieving High-order Convergence Rates with Deforming Basis Functions*. SIAM Journal on Scientific Computing 26 (3), pp. 885-906. 2005.
- L. P. Cook and **L. F. Rossi**. *Shear Layers and Demixing in a Model for Shear Flow of Self-assembling Micellar Solutions*. Journal on Non-Newtonian Fluids, 116, pp. 347-369, 2004.
- L. F. Rossi**, Hilary Inyang, J. Graham-Eagle and S. Pennell. *A Model of Coupled Heat and Moisture Transport in an Annular Clay Barrier*. American Society of Civil Engineering Journal on Environmental Engineering, 130 (8), pp. 855-862, 2004.
- L. F. Rossi** and James Graham-Eagle. *On the Existence of Two-dimensional, Localized, Self-similar Vortical Structures*. SIAM Journal on Applied Mathematics, 62 (6), pp. 2114-2128, 2002.
- L. F. Rossi**. *A High Order Lagrangian Scheme for Flow Through Unsaturated Porous Media* in Contemporary Mathematics 295: Fluid Flow and Transport in Porous Media: Mathematical and Numerical Treatment, pp.433-445. 2002.
- L. F. Rossi** and G. Sohos. *Interactive Simulation of Contaminant Evolution Through Porous Media*. Future Generation Computer Systems, 15, pp. 477-484. 1999.
- D. Sarocka, A. J. Bernoff and **L. F. Rossi**. *Large-amplitude Interfaces in the Riley-Davis and Sivashinsky Equations for Directional Solidification*. Physica D. 127, pp. 146-176. 1999.
- L. F. Rossi**, G. Kaiser and D. Washburn. *Recovery of Kolmogorov Statistics in Thermal Mixing in the Troposphere: The Hazards of Real Data*. SPIE Proceedings Vol 3381, pp. 246-255, 1998.
- L. F. Rossi**, J. F. Lingeitch and A. J. Bernoff. *Quasi-steady Monopole and Tripole Attractors for Relaxing Vortices*. Physics of Fluids, 9 (8), pp. 2329-2338, 1997.
- L. F. Rossi**. *Merging Computational Elements in Vortex Simulations*. SIAM Journal on Scientific Computing, 18 (4), pp. 1014-1027, 1997.
- L. F. Rossi**. *Resurrecting Core Spreading Vortex Methods: A Scheme that is both Deterministic and Convergent*. SIAM Journal on Scientific Computing, 17 (2), pp. 370-397, 1996.
- L. F. Rossi**. *Vortex Computations of Wall Jet Flows*. Proceedings of "A Forum on the Application of Vortex Methods to Engineering Problems," Sandia National Laboratory. 1995.
- L. F. Rossi**. *Fundamental Properties of a Continuous Dynamic Neural Network*. Interface 12 (2), pp. 31-53, 1988.

- 2009 Ke Li, Kyle Thomas , Claudio E. Torres, **Louis F. Rossi**, Chien-Chung Shen. *Naturally Adaptive Protocol for Wireless Sensor Networks Based on Slime Mold*. Third IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO). San Francisco, September 14-18, 2009. (Poster paper, acceptance rate: 50%).
- 2008 Stephen F. Siegel and **Louis F. Rossi**. *Analyzing BlobFlow: A Case Study Using Model Checking to Verify Parallel Scientific Software*. Lecture Notes in Computer Science: Recent Advances in Parallel Virtual Machine and Message Passing Interface 15th European PVM/MPI Users Group Meeting, Dublin, Ireland, September 7-10, 2008. Proceedings.
- 2008 Ke Li, Kyle Thomas, **Louis F. Rossi** and Chien-Chung Shen . *A Slime-Mold Inspired Protocol for Wireless Sensor Networks*. Second IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO). Venice, Italy, October 20-24, 2008. (Acceptance rate: 27%)
- 2007 **Louis F. Rossi**, Ke Li, Justin Yackoski, Chien-Chung Shen. *Slime mold inspired coordinations for wireless sensor and actor networks* *International Conference on Mobile Computing and Networking Proceedings of the First ACM workshop on Sensor and actor networks*. Montreal, Quebec, Canada, pp 55 - 56.
- 2007 Xiaofeng Han, **L. F. Rossi**, and Chien-Chung Shen. *Autonomous navigation of wireless robot swarms with covert leadership*. 1st International Conference on Robot Communication and Coordination (ROBOCOMM), Athens, Greece, October 15-17. (Acceptance rate: 49%)

Recent invited seminars and lectures

- 2008 "Field interpolation via the reverse heat equation"
New Jersey Institute of Technology
- 2007 "Implications of mixing in two-dimensional, coherent vortical structures"
Institute for Pure and Applied Mathematics (IMPA), Rio de Janeiro.
- 2007 "Field interpolation and other challenges for high order vortex methods"
Federal University of Rio de Janeiro
- 2007 "Reprojection: Mathematical and computational challenges for high order vortex methods"
University of Montreal
- 2005 "The Biot-Savart Integral of Elliptical Gaussian basis functions for high accuracy vortex methods"
Duke University
- 2005 "High performance particle computation for Navier-Stokes."
Army Research Laboratory
- 2005 "High order vortex methods for the incompressible Navier-Stokes equations"
Morgan State University
- 2003 "High spatial order vortex methods and Lagrangian techniques using deforming basis functions"
National Institute of Standards and Technology

- 2007 *Simple filtration using porous media* (with S. Altrichter et al.)
Proceedings of the Twenty-first Annual Workshop on Mathematical Problems in Industry (2007).
- 2006 *Modeling Mother/Child attachment in stressful situations* (with Lionel Alberti et. al.)
Proceedings of the first Fields-MITACS Industrial Problems workshop (2006).
- 2004 *Multi-Phase Flow in a Thin Porous Material* (with Saziye Bayram et. al.)
Proceedings of the Eighteenth Annual Workshop on Mathematical Problems in Industry (2004)
- 2002 *Double Flame Systems for Stable Lean-Premixed Combustion* (with M. Booty et. al.)
Proceedings of the Eighteenth Annual Workshop on Mathematical Problems in Industry (2002)
- 2001 *Shape Optimization of Pressurized Air Bearings* (with P. Howell et. al.)
Proceedings of the Seventeenth Annual Workshop on Mathematical Problems in Industry (2001)
- 2000 *Interaction of Ocean Waves with Wave Generated by Surfing Ship* (with D. Anderson et. al.)
Proceedings of the Sixteenth Annual Workshop on Mathematical Problems in Industry (2000)
- 1999 **L. F. Rossi.** *Book Review: Flow at Large Reynolds Numbers: Advances in Fluid Mechanics, vol 11.*
H. Schmitt, ed. for Environmental Monitoring and Assessment, 57, pp. 109-112. 1999.