Curriculum Vitae

Keith Mertens

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Research Interests

- Problems in fluid dynamics relating to free surfaces and pattern formation.
- Theory of differential equations, with recent focus on modeling systems which involve stochastic processes and multi-scale effects.
- Physics and chemistry of fluid-fluid, fluid-solid, and fluid-gas interfaces.

Education-Experience

- RTG Postdoctoral Research Associate, University of North Carolina Chapel Hill, Department of Mathematics (8/2008-)
- Colorado State University, Mathematics, Ph.D Spring 2008
- University of New Mexico, Mathematics M.S. Summer 2005
- Research Internship, Niels Bohr Institute-Technical University of Denmark, (Aug2003-Jan2004)
- University of New Mexico, Physics/Applied Mathematics B.S. Fall 2002

Publications

- Amplitude Equation for Under Water Sand Ripples in One Dimension, T.Schnipper, K. Mertens, C. Ellegaard, T. Bohr *Phys. Rev. E ,* **78** , 047301 2008
- Noise-Driven Meandering Streams, B Birnir, K. Mertens, V. Putkaradze, P. Vorobieff *Phys. Rev. Lett.* **101** (11) 114501, 2008
- Morphology of a Stream Flowing Down an Inclined Plane. Part 2: Stream Meandering, B Birnir, K. Mertens, V. Putkaradze, P. Vorobieff *J. Fluid Mech.*, **607** 401-417, 2008
- Theory and Experiment for directed Self-Assembly of Nano-Particles, K. Mertens, V. Putkaradze, D. Xia, S. Brueck, *J. App. Phys.* **98** , 034309, 2005
- Morphology of a Stream Flowing Down an Inclined Plane. Part 1: Braiding, K. Mertens, V. Putkaradze, P Vorobieff, *J.Fluid Mech.* **531** , 49-58, 2005
- Braiding Patterns on an Inclined Plane, K.Mertens, V. Putkaradze, P. Vorobieff, *Nature* **430** , 165, 2004

Invited Lectures

- University of Chicago, (Meandering Streams), 2/2008
- University of California Santa Barbara (Meandering Streams) 2/2008
- University of North Carolina (Meandering Streams), Chapel Hill NC 1/2008
- Complex Motions in Fluids II. (Meandering Streams), Denmark, 8/2007
- Los Alamos National Labs (LANL), Center for Nonlinear Studies (CNLS) (Gravity Driven Fluid Flows), Los Alamos NM, 8/2006
- Complex Motion in Fluids (Directed Self-Assembly DSA), Denmark, 8/2004
- University Paris 6 (Fluid Braids), France, 12/2003
- University Twente (Fluid Braids), Holland, 12/2003
- Niels Bohr Institute (Fluid Braids), Denmark, 12/2003

Actively Attended Conferences and Additional Talks

- Division of Fluid Dynamics Meeting (Scaling laws for meandering streams), San Antonio TX, 11/2008
- Cha-Cha Days Workshop, co-organizer University of North Carolina Chapel Hill, 10/2008
- RTG Fluid Dynamics Meeting (Meandering Streams), University of North Carolina Chapel Hill, 9/2008
- Institute for Applied and Pure Mathematics (IPAM) Workshop III: Transport Systems in Geography, Geosciences, and Networks, Poster Presentation (Meandering Streams), Los Angeles CA, 5/2008
- PhD Defense, Colorado State University (Mathematical Methods for Modeling Fluid-Solid Interactions), Fort Collins CO, 4/2008
- Dynamics Seminar (Inclined Plane Flows), Colorado State University, Ft Collins CO, 2/2008
- Division of Fluid Dynamics Meeting (Flow Meandering and Surface Properties), Salt Lake City UT, 11/2007
- Greenslopes, Colorado State University (Meandering Streams), Ft Collins CO, 8/2007
- American Mathematical Society (Meandering Streams), Tucson AZ, 4/2007
- Greenslopes, Colorado State University (Meandering Streams), Ft Collins CO, 2/2007
- Division of Fluid Dynamics Meeting (Meandering), Tampa Fl, 11/2006
- Division of Fluid Dynamics, Gallery of Fluid Motion Video Presentation (Oxygen Drops), Chicago IL, 11/2005
- Greenslopes, Colorado State University (Free Surface Flows), Ft Collins CO, 10/2005
- Masters Defense, University of New Mexico (Fluid Braids), Albuquerque NM, 7/2005
- Los Alamos Days, University of Arizona (Fluid Braids), Tuscon AZ, 1/2005
- Division of Fluid Dynamics Meeting (Fluid Braids), Seattle WA, 11/2004
- Division of Fluid Dynamics Meeting, Poster Presentation (Fluid Braids), Dallas TX, 11/2002

Teaching Experience

- Ordinary Differential Equations M383, University of North Carolina, Fall 2008
- Engineering Calculus M160, Colorado State University, Spring 2007, Fall 2007
- Fun and Discovery Summer School, Colorado State University, Summer 2006, Summer 2007
- Business Calculus M141, Colorado State University, Spring 2006, Fall 2006
- Engineering Calculus III. M261, Colorado State University, Fall 2005
- Business Calculus M180, University of New Mexico, Spring 2003
- Teaching Assistant: Conceptual Physics 102, University of New Mexico, Spring 2002, Fall 2002, Spring 2003
- Teaching Assiatant: Astronomy 101, University of New Mexico, Fall 2001

Other Useful Skills

- Operating Systems: Basic administrative skills for Unix, Linux, and Windows
- Programing (functional): Matlab, Maple, Latex, HTML
- Programing (some experience with): Labview, C++, shellscripts
- Experience with data collection and analysis using PIV

Awards/Recognition

- Albuquerque Journal (October 2008)
- Santa Fe New Mexican (September 2008)
- Nominated for 2008 Best Teacher Award CSU
- Graduate Student Research Assistantship, Colorado State University (Spring 2008)
- Invited Chair (Free-Surface Session), Division of Fluid Dynamics Meeting, Salt Lake City, Utah (11/2007)
- Mathematics Summer Research Fellowship, Colorado State University (2007)
- The National Dean's List (May 2007)
- Graduate Student Teaching Assistantship, Colorado State University (Fall 2005-Fall 2007)
- Quantum Research Publications, (December 2005)
- DFD News, (Spring/Summer 2005)
- Campus News (University of New Mexico), (March 14, 2005)
- American Physics Society, Physics News in 2004, (February 2005)
- American Institute of Physics, AIP News Updates, (July 14, 2004)
- Albuquerque Journal, (July 9, 2004)
- Daily Lobo, (July8-July14, 2004)
- Collegiate All-American Scholars Award, (May 2004)
- Graduate Student Research Assistantship, University of New Mexico (Spring 2004-Summer 2005)
- Graduate Student Teaching Assistantship, UNM (Spring 2003)
- Kappa Mu Epsilon National Mathematics Honors Society, (2000-2002)