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## BIOGRAPHICAL SKETCH

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NAME John F. Wambaugh		POSITION TITLE Physical Scientist	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Michigan, Ann Arbor, MI	B.S.	1995-1999	Physics
Georgia Institute of Technology, Atlanta, GA	M.S.	1999-2001	Physics
Duke University, Durham, NC	M.S.	2001-2005	Computer Science
Duke University, Durham, NC	Ph.D.	2001-2006	Physics
NCCT, US EPA, Research Triangle Park, NC		2006-2008	Statistical Analysis of Biological Models

### A. POSITIONS and HONORS

#### Research and Professional Experience:

2008-present	Physical Scientist, National Center for Computational Toxicology, US EPA, RTP, NC
2006-2008	Postdoctoral Physicist, National Center for Computational Toxicology, US EPA, RTP, NC (mentors: Hugh Barton and Woodrow Setzer)
2002-2006	Research Assistant, Department of Physics, Duke University, Durham NC (advisor: Robert Behringer)
2001-2003	Teaching Assistant, Department of Physics, Duke University, Durham, NC
2001	Visiting Student, Center for Nonlinear Science, Los Alamos National Laboratory, Los Alamos, NM (advisors: Charles Reichhardt, Cynthia Olson-Reichhardt)
1999-2001	Teaching Assistant, School of Physics, Georgia Institute of Technology, Atlanta, GA

#### Professional Societies and Affiliations:

2007-present	Member, Sigma Xi, Duke University Chapter
2006-present	Member, Society of Toxicology: Biological Modeling and Risk Assessment Specialty Sections, North Carolina Society of Toxicology
2001-present	Member, American Physical Society: Division of Fluid Dynamics, Statistical and Nonlinear Physics Topical Group, Forum on Graduate Student Affairs
1995-present	Member, American Association of Physics Teachers

#### Honors and Awards:

2006	Dynamics Days Student Travel Award, Dynamics Days 2006 Conference in Baltimore, MD
2005	Duke University Graduate School Student Travel Award, American Physical Society, Division of Fluid Dynamics Meeting in Chicago, IL
2004	Duke University Graduate School Student Travel Award, American Physical Society, Division of Fluid Dynamics Meeting in Seattle, WA
2003	Duke University Graduate School Student Travel Award, American Physical Society, Division of Fluid Dynamics Meeting in East Rutherford, NJ

## B. SELECTED PUBLICATIONS (selected from 14 total).

1. "Modeling Single and Repeated Dose Pharmacokinetics of PFOA in Mice," I. Lou, J.F. Wambaugh, C. Lau, R.H. Hanson, A.B. Lindstrom, M.J. Strynar, R.D. Zehr, and H.A. Barton, *Toxicological Sciences* 107, 331-341 (2009)
2. "Comparing Models for PFOA Pharmacokinetics Using Bayesian Analysis," J.F. Wambaugh, H.A. Barton, and R.W. Setzer, *Journal of Pharmacokinetics and Pharmacodynamics* 35, 683-712 (2008)
3. Wambaugh, J.F., Majmudar, T.S., Tighe, B.P., Socolar, J.E.S. and Behringer, R.P., "Experimental observation of spatial scaling in dense granular matter," *in preparation*
4. Wambaugh, J.F., Hartley, R.R., and Behringer, R.P., "Force networks and elasticity in granular silos," arXiv:0801.3387
5. Wambaugh, J.F., Matthews, J.V., Gremaud, P.A. and Behringer, R.P., "Response to perturbations in granular flow," *Physical Review E* 76, 051303 (2007)
6. Wambaugh, J.F., "Graph Percolation as an Analog to Granular Force Networks," cond-mat/0603314, (2006)
7. Mort, P., McKenzie, K., Wambaugh, J.F., and Behringer, R.P., "Granular flow through an Orifice – Effect of granule size and shape distributions," *Proceedings of Fifth World Congress on Particle Technology* (2006)
8. Wambaugh, J.F. and Behringer, R.P., "Asymmetry-induced circulation in granular hopper flows," *Powders & Grains 2005*, pages 915-918 (2005).
9. Wambaugh, J.F., Marchesoni, F. and Nori, F., "Shear and Loading in Channels: Oscillatory Shearing and Edge Currents of Superconducting Vortices," *Physical Review B* 67, 144515 (2003)
10. Wambaugh, J.F., Reichhardt C., and Olson, C.J., "Ratchet-Induced Segregation and Transport of Non-Spherical Grains," *Physical Review E* 65, 031308 (2002)
11. Wambaugh, J.F., Reichhardt, C., Olson, C.J., Marchesoni, F., and Nori, F., "Superconducting Fluxon Pumps and Lenses," *Physical Review Letters* 83, 5106 (1999)

## C. PRESENTATIONS WITH ABSTRACTS

1. "Examining Models for the Pharmacokinetics of Perfluorooctanoic acids", Annual Meeting of the Society of Toxicology in Baltimore, Maryland, March 2009 (talk)
2. "Enhancing the Modeling of PFOA Pharmacokinetics with Bayesian Analysis," Annual Meeting of the Society of Toxicology in Seattle, Washington, March 2008 (poster)
3. "Assessing Uncertainty in the Toxicology of PFOA," International Science Forum on Computational Toxicology, Research Triangle Park, North Carolina, May 2007 (poster)
4. "Bayesian Analysis of Parameters for Pharmacokinetic Models," Annual Meeting of the Society of Toxicology in Charlotte, North Carolina, March 2007 (poster)
5. "Joint Analysis of PFOA Plasma Concentration and Excretion Data," Perfluoroalkyl Acids and Related Chemistries, Society of Toxicology Workshop in Arlington, Virginia, February 2007 (poster)
6. "Spatial Distribution of Forces within Granular Materials," APS Division of Fluid Dynamics Annual Meeting in Tampa, Florida, November 2006 (talk)
7. "Impact of Particle Elasticity on Granular Force Networks," APS March Meeting in Baltimore, Maryland, March 2006 (talk)
8. "Square Amplitude Granular Waves," Dynamics Days 2006 Meeting in Bethesda, Maryland, January 2006 (talk)
9. "Sensitivity of Granular Hopper Flows to Boundary Conditions," APS Division of Fluid Dynamics Annual Meeting in Chicago, Illinois, November 2005 (talk)
10. "Asymmetry-induced circulation in granular hopper flows," *Powders and Grains 2005*, Stuttgart, Germany, June 2005 (poster)
11. "Circulation in Asymmetric Granular Hoppers," APS Division of Fluid Dynamics Annual Meeting in Seattle, Washington, November 2004 (talk)
12. "Observed Deviations from Janssen Model in Granular Silos," Dynamics Days 2004 Meeting in Chapel Hill, North Carolina, January 2004 (poster)
13. "Elastic Effects in Granular Pressure Profiles," APS Division of Fluid Dynamics Annual Meeting in East Rutherford, New Jersey, November 2003 (talk)
14. "Asymmetry-Induced Circulation in Conical Granular Flows," APS Division of Fluid Dynamics Annual

Meeting in East Rutherford, New Jersey, November 2003 (talk)

15. "Ratchet-Induced Segregation and Transport of Non-Spherical Grains," APS March Meeting in Indianapolis, Indiana, March 2002 (talk)
16. "A New System for Accessing Transfer Function Coefficients for an Architectural Computer-Aided Thermal Optimization Tool," Fifth International Building Performance Simulation Association Meeting, Prague, Czech Republic, September 1997 (poster)

#### **D. INVITED PRESENTATIONS**

1. "Biological Modeling for Toxicology at the US Environmental Protection Agency," Department of Physics and Chemistry, Coastal Carolina University, Conway, South Carolina, April 2009

#### **E. WORKSHOPS**

1. "PFAA Days II", Environmental Protection Agency, Research Triangle Park, North Carolina, June 2008
2. "Perfluoroalkyl Acids Research Planning Workshop," Environmental Protection Agency, Research Triangle Park, North Carolina, August 2007
3. "Perfluoroalkyl Acids and Related Chemistries: Toxicokinetics and Mode-of-Action," Society of Toxicology, Arlington, Virginia, February 2007
4. "Uncertainty and Variability in Pharmacokinetic Models", Environmental Protection Agency, Research Triangle Park, North Carolina, October 2006
5. "Multiscale Model Development and Control Design Workshop on Fluctuations and Continuum Equations for Granular Flow", Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, North Carolina, April 2004

#### **F. CONTINUING EDUCATION**

1. "Characterizing Variability and Uncertainty with Physiologically-Based Pharmacokinetic Models," Society of Toxicology, Baltimore, Maryland, March 2009
2. "Characterizing Modes-of-Action and Their Relevance in Assessing Human Health Risks," Society of Toxicology, Baltimore, Maryland, March 2009
3. "Beginning and Intermediate Modeling and Simulation Techniques using acslX, with Applications to Computational Biology," Aegis Software, Research Triangle Park, North Carolina, May 2008
4. "Dose-Response Modeling for Occupational and Environmental Risk Assessment," Society of Toxicology, Seattle, Washington, March 2008
5. "Use of Data for Development of Uncertainty Factors in Non-Cancer Risk Assessment," Society of Toxicology, Seattle, Washington, March 2008
6. "Physiologically Based Pharmacokinetic Modeling for Risk Assessment Applications," Society of Toxicology, Charlotte, North Carolina, March 2007
7. "Fundamentals of Human Health Risk Assessment with a Case Study Approach," Society of Toxicology, Charlotte, North Carolina, March 2007
8. "Interpretation of Biomonitoring Data Using Physiologically Based Pharmacokinetic Modeling," CIIT, Center for Human Health Assessment, Research Triangle Park, North Carolina, September 2006