

Curriculum Vitae
WOODROW L. SHEW
updated on 10 May, 2008

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Born Hamlin, West Virginia, United States of America, 20th of September, 1976

. o **EDUCATION** o .

1999 → **2004** Ph.D., Physics, University of Maryland
College Park, Maryland, USA
1994 → **1998** BA, Physics, College of Wooster
Wooster, Ohio, USA

. o **EMPLOYMENT** o .

2006 → **NOW** Postdoctoral, Neuroscience, National Institutes of Health
2004 → **2006** Postdoctoral, Physics, École Normale Supérieure de Lyon
2000 → **2004** Graduate research assistant, Physics, University of Maryland
2000 → **2004** Volunteer tutor, FOCUS-Beacon House, Washington D.C.
1999 → **2000** Graduate teaching assistant, Physics, University of Maryland
1998 → **1999** Laboratory technician, Physics, University of San Francisco
1994 → **1998** Laboratory technician, Physics, College of Wooster

. o **MEMBERSHIPS & HONORS** o .

Society for Neuroscience
National Institutes of Health Postdoctoral Intramural Research Training Award
Centre Nationale de la Recherche Scientifique Postdoctoral Fellowship
École Normale Supérieure Postdoctoral Fellowship
National Science Foundation International Research Fellowship
independently wrote and was awarded grant
American Physical Society since 2000
groups: Stat Nonlin Phys, Bio Phys, Div Fluid Dynamics
Best IREAP graduate seminar
yearly competition at UMD
Phi Beta Kappa
Graduated cum laude with departmental honors from College of Wooster
Arthur H. Compton Award in Physics at College of Wooster
14th place San Francisco Chronicle Marathon

· ◦ RESEARCH ◦ ·

- 2007 → NOW Neuronal networks' response to stimulus:** We use micro-electrode arrays study the capacity of cultured neuronal networks to process electrical stimuli. We are testing the hypothesis that a brain in the critical state is optimally suited to process sensory input. The project is a collaboration between University of Maryland and National Institutes of Health with H. Yang, R. Roy, T. Petermann and D. Plenz.
- 2006 → NOW Spontaneous activity in neuronal networks:** Using two-photon microscopy and micro-electrode arrays we measure activity in living neuronal networks in order to better understand "neuronal avalanches" in the cortex. National Institutes of Health *with Dietmar Plenz*
- 2005 → NOW Smart particles:** Developed wireless, miniature, measurement devices for making measurements in complex fluid flows. We were the first to make temperature measurements from the reference frame of a sensor which moves along with the fluid. This project is still growing and involves a collaboration with Dan Lathrop and his 3m dynamo experiment at UMD. École Normale Supérieure de Lyon *with Jean-François Pinton*
- 2004 → 2006 Bubble dynamics:** Used continuous ultrasound technique and high speed video to make precise measurements of single bubble dynamics. Developed a dynamical model for zigzag and spiral bubble path instability. École Normale Supérieure de Lyon *with Jean-François Pinton*
- 2001 → 2004 Liquid sodium model of Earth's outer core:** Designed, built, and conducted rapidly rotating, liquid metal, convection experiments in a 60 cm spherical vessel. We uncovered new scaling laws which shed light on the state of convection in Earth's core and the impact on the geodynamo. University of Maryland *with Daniel P. Lathrop*
- 2000 → 2002 Magnetoturbulence experiments:** Studied magnetohydrodynamic instabilities in a highly turbulent liquid metal with large magnetic fields applied. University of Maryland *with Daniel R. Sisan and Daniel P. Lathrop*
- 1997 → 1998 Controlling chaos with disorder in coupled oscillators:** Designed, built, and conducted experiments with an array of coupled physical pendulums with a circularly driven pivot. The College of Wooster *with John F. Lindner*

· ◦ TEACHING & MENTORING ◦ ·

TEACHING				
subject	ages	group size	years	institution
reading & math (tutoring)	8-11	1	2000-04	Beacon House, D.C.
pre-med physics (TA)	18-30	25	1999	U. of Maryland
pre-med physics (lab)	18-30	25	1999	U. of Maryland
intro physics (lab)	18-21	15	1999	U. of San Francisco
intro physics (recitations)	18-21	10	1998	Col. of Wooster
intro physics (tutoring)	20	1	1996	Col. of Wooster
algebra (tutoring)	9-12	2	1995	none
MENTORING				
Graduate student	22	1	2007-8	U. of Maryland
Masters student	30	1	2006-8	Nat. Inst. of Health
Undergraduate student	22	1	2005	ENS-Lyon
Graduate student	40	1	2003	U. of Maryland
Undergraduate student	24	1	2001-02	U. of Maryland
Masters student	21	1	2001	U. of Maryland
Undergrads	18-21	10-20	1997-98	Col. of Wooster
Undergrads	18-21	20-30	1996-97	Col. of Wooster

· ○ PATENTS ○ ·

- 2008** “In situ monitoring and control of fluid mixing processes”
Demande de brevet francais # 08 00682.

· ○ PEER-REVIEWED PUBLICATIONS ○ ·

- 2008** “Polymer and surface roughness effects on the drag crisis for falling spheres” N. Lyotard, W.L. Shew, L. Bocquet, and J.-F. Pinton, *Euro. Phys. J. B* **60**, 469.
- 2007** “Lagrangian temperature, velocity and local heat flux measurement in Rayleigh-Benard convection” Y. Gasteuil, W.L. Shew, M. Gibert, F. Chilla, B. Castaing, and J.-F. Pinton, [COVER ARTICLE] *Phys. Rev. Lett.* **99**, 234302.
- 2007** “An instrumented tracer for Lagrangian measurements in Rayleigh-Benard convection” W.L. Shew, Y. Gasteuil, M. Gibert, P. Metz, and J.-F. Pinton, *Rev. Sci. Instruments* **78**, 065105.
- 2006** “Dynamical model of bubble path instability.”, W. L. Shew and J.-F. Pinton, *Phys. Rev. Lett.* **97** 144508.
- 2006** “Force measurements on a rising bubble.”, W. L. Shew, S. Poncet, and J.-F. Pinton, *J. Fluid Mech.* **569**, 51.
- 2006** “Viscoelastic effects on the dynamics of a rising bubble.”, W. L. Shew and J.-F. Pinton, *J. Stat. Mech.* January, P01009
- 2005** “Liquid sodium model of geophysical core convection”, W. L. Shew and D. P. Lathrop, *Phys. Earth Planet. Int.* **153**, 136.
- 2003** “Lorentz force effects in magneto-turbulence”, D. R. Sisan, W. L. Shew, and D. P. Lathrop, *Phys. Earth Planet. Int.* **135**, 137.
- 2002** “Mechanically forced and thermally driven flows in liquid sodium”, W. L. Shew, D. R. Sisan, and D. P. Lathrop, *Magnetohydrodynamics* **38**, 121.
- 2001** “Laboratory experiments on the transition to MHD dynamos”, D. P. Lathrop, W. L. Shew, and D. R. Sisan, *Plasma Phys. and Controlled Fusion* **43**, 151-A160 Suppl. 12A.
- 1999** “Taming chaos with disorder in a pendulum array”, W. L. Shew, H. Coy, and J. F. Lindner, *Am. J. Phys.* **67**, 703

· ○ INVITED PRESENTATIONS ○ ·

- 2007 DEC** Dynamo experiments: bringing Earth’s core into the lab.
Colloquium, College of Wooster, *Wooster, OH*
- 2007 NOV** Phase transitions in the brain
Colloquium, University of North Carolina, *Chapel Hill, NC*
- 2007 SEP** Smart Particles and Sensor Networks
MURI meeting, University of Maryland, *College Park, MD*
- 2007 SEP** Remnants of Rat Thoughts: Experimental Measurements of Neuronal Networks
Colloquium, College of Wooster, *Wooster, OH*
- 2007 MAY** Smart Particles: Temperature Measurements in Turbulent Flow
Colloquium, Georgetown University, *Washington, D.C.*

- 2006 DEC** Lagrangian Measurement of Temperature in Rayleigh-Benard Convection
MEDYFINOL Conference, *Mar del Plata, Argentina*
- 2006 SEP** Bubble Path Instabilities: Force Measurements and Modeling
Colloquium, École Centrale, *Lyon, France*
- 2005 SEP** Physical Mechanisms of Bubble Path Instability
Colloquium, University of Maryland, *College Park, MD*
- 2005 JUN** Physical Mechanisms of Bubble Path Instability
Hydrodynamics of Bubbly Flows workshop, *Leiden, Netherlands*
- 2005 JAN** Liquid Sodium Model of Earth's Outer Core
Colloquium, Université Joseph Fourier, LGIT, *Grenoble, France*
- 2004 NOV** Liquid Sodium Model of Earth's Outer Core
Colloquium, University of Twente, *Enschede, Netherlands*
- 2004 OCT** Liquid Sodium Model of Earth's Outer Core
Colloquium, École Normale Supérieure de Lyon, *Lyon, France*
- 2004 MAY** Liquid Sodium Model of Earth's Outer Core
European Geophysical Union Meeting, *Nice, France*

· ◦ **SKILLS** ◦ ·

Languages English, French, Matlab, C, html, css, php, PIC machine code.

Measurements Two-photon microscopy, RF communication, ultrasonic particle tracking, rapidly rotating systems, high speed video processing.

Software Matlab, Labview, Autocad, Adobe Illustrator, Microsoft Excel.

Fabrication mill, lathe, bandsaws, plasma cutter, mig welding, small electronics, soldering.