

Curriculum Vitae
WOODROW L. SHEW

May, 2009

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NIH/NIMH
Bldg 35 Rm 3A-202
35 Convent Dr.
Bethesda, MD 20892-20814
USA

email: sheww@mail.nih.gov

phone: 301.402.6947

web: <http://woodrowshew.com>

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

· ○ **EDUCATION** ○ ·

1999 → **2004** Ph.D., Physics, University of Maryland
College Park, Maryland, USA

1994 → **1998** BA, Physics, College of Wooster
Wooster, Ohio, USA

· ○ **EMPLOYMENT** ○ ·

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

· ○ **MEMBERSHIPS & HONORS** ○ ·

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

American Physical Society since 2000

groups: Stat Nonlin Phys, Bio Phys, Div Fluid Dynamics

Best IREAP graduate student seminar at UMD

Phi Beta Kappa

Cum laude, departmental honors at College of Wooster

Arthur H. Compton Award in Physics at College of Wooster

14th place San Francisco Chronicle Marathon

· ○ **PATENTS** ○ ·

2008 “In situ monitoring and control of fluid mixing processes”

Demande de brevet francais # 08 00682.

· ◦ RESEARCH ACTIVITIES ◦ ·

- 2007 → NOW Neuronal networks' response to stimulus:** Used micro-electrode arrays to study the capacity of cultured brain tissue to process electrical stimuli. We confirmed the hypothesis that neural networks respond to the maximum range of stimulus amplitudes when the network is closest to a continuous phase transition. 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 Synchrony in neuronal networks:** Used two-photon microscopy and micro-electrode arrays to better understand how single neurons participate in synchronous neural activity in the cortex. National Institutes of Health *with Dietmar Plenz*
- 2005 → NOW Smart particles:** Developed wireless, miniature sensors for investigating 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 a 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:** Developed a rapidly rotating, liquid metal, thermal convection experiment 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 geomagnetic field. 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:** Constructed an array of coupled physical pendulums and investigated the role of disorder in synchronization. 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

· ◦ INVITED PRESENTATIONS ◦ ·

- 2009 FEB** Phase transitions and dynamic range of the brain.
Neurobiology Seminar, NIH, *Bethesda, MD*
- 2009 JAN** Phase transitions and dynamic range of the brain.
Colloquium, Emory University, *Atlanta, GA*
- 2009 JAN** Phase transitions and dynamic range of the brain.
Colloquium, University of Texas, *Austin, TX*
- 2008 OCT** Phase transitions and dynamic range of the brain.
MURI meeting, University of Maryland, *College Park, MD*
- 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 In vivo rat micro-electrode array recording, micro-electrode arrays in acute slice and cultured rat brains, patch-clamping, 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.