Paul Wright

Contact Information

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Research Interests

Dynamical systems, ergodic theory, and probability – especially chaotic systems, hyperbolicity, and applications to mathematical physics.

Employment History

University of Maryland, College Park

National Science Foundation Mathematical Sciences Postdoctoral Research Fellow, August 2007 – present

Education

Courant Institute of Mathematical Sciences, New York University

Ph.D. in Mathematics, May 2007

- Dissertation Topic: *Rigorous results for the periodic oscillation of an adiabatic piston*
- Advisor: Lai-Sang Young
- National Science Foundation Graduate Research Fellow

M.S. in Mathematics, May 2005

University of California at Berkeley

B.A. in Mathematics and Minor in Physics, May 2002

- Valedictorian and highest honors in mathematics
- Highest distinction in general scholarship

Publications

Escape rates: A variational approach, in preparation. (with M. Demers and L.-S. Young)

The diffusion coefficient for piecewise expanding maps of the interval with metastable states, to be submitted soon. (with D. Dolgopyat)

Approximating invariant densities of metastable systems, submitted. (with C. González Tokman and B. Hunt)

Escape rates and physically relevant measures for billiards with small holes, to appear in *Communications in Mathematical Physics.* (with M. Demers and L.-S. Young)

The periodic oscillation of an adiabatic piston in two or three dimensions, *Communications in Mathematical Physics* **275** (2007), no. 2, 553-580.

A simple piston problem in one dimension, *Nonlinearity* **19** (2006), 2365-2389.

Semiclassical generalization of the Darboux-Christoffel formula, *J. Math. Phys.* **43** (2002), no. 10, 4668-4680. (with R. Littlejohn)

Funding and Honors

Submitted	National Science Foundation Mathematical Sciences Analysis Program Grant Proposal, October 2009
2007–2010	National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship, $108,000
2002–2006	National Science Foundation Graduate Research Fellowship, $96,000
2002–2007	Henry MacCracken Fellowship, New York University Graduate School of Arts and Sciences
May 2002	Valedictorian, Mathematics Department, University of California at Berkeley
1998–2002	Chancellor's Scholar, University of California at Berkeley
1998–2002	National Merit Scholar

Administrative Service

2007–present	Organizer, Dynamical Systems Seminar, University of Maryland; see `http://www.math.umd.edu/research/seminars/dynamics/`
2007–2009	Organizer, Student Dynamical Systems Seminar, University of Maryland; see `http://www.math.umd.edu/research/seminars/dynamics/RIT.html`
2004–2007	Organizer, Dynamical Systems Mini-seminar, Courant Institute of Mathematical Sciences, New York University

Teaching Experience

Fall	2009	Differential Equations for Scientists and Engineers Lecturer (honors section)
Spring	2009	Elementary Calculus I Lecturer (large section)
Fall	2008	Elementary Calculus I Lecturer (large section)
Spring	2007	Discrete Mathematics Lecturer
Fall	2006	Discrete Mathematics Lecturer
Spring	2005	Calculus I Lecturer
Spring	2002	Multivariable Calculus Teaching Assistant
Fall	2001	Linear Algebra and Differential Equations Teaching Assistant

Conference Talks

Dynamische Systeme, Mathematisches Forschungsinstitut Oberwolfach, Germany, July 2009; *Billiards with small holes.*
See `http://www.mfo.de/cgi-bin/path?cgi-bin/tagung_espe?type=21&tnr=0928` .

Semester on Hyperbolic Dynamical Systems, Erwin Schrödinger Institute, Vienna, June 2008; *Some rigorous results for the periodic oscillation of an adiabatic piston.*

Workshop in Dynamical Systems and Related Topics, Penn State University, November 2006; *Some rigorous results for a simple model of the adiabatic piston.*

Midwest Dynamical Systems Seminar, Indiana University - Purdue University Indianapolis, October 2006; *Some rigorous results for a simple model of the adiabatic piston problem.*

95^{th} Statistical Mechanics Conference, Rutgers University, May 2006; *A simple piston problem.*

Workshop on Dynamical Systems and Related Topics, University of Maryland, College Park, March 2006; *A simple piston problem.*

Other Talks

Analysis Seminar, George Washington University, November 2009; *Some rigorous results for the periodic oscillation of an adiabatic piston.*

Dynamical Systems Seminar, University of Maryland, October 2009; *Billiards with small holes.*

Student Dynamics Seminar, University of Maryland, November 2009; *An introduction to escape rates and conditionally invariant measures for dynamical systems with holes.*

Student Dynamics Seminar, University of Maryland, November 2008; *Rigorous results and open problems for the adiabatic piston problem.*

Graduate Student-Postdoc Seminar, Courant Institute of Mathematical Sciences, April 2007; *Advice on how to get a job and graduate.*

Dynamics Seminar, University of Maryland, March 2007; *Some rigorous results for a simple model of the adiabatic piston.*

Special Seminar, University of Toronto, February 2007; *Some rigorous results for a simple model of the adiabatic piston.*

Dynamical Systems Seminar, Courant Institute of Mathematical Sciences, September 2006; *A version of Gronwall's inequality for billiards, and some rigorous results for a*

model of the adiabatic piston.

Dynamical Systems Seminar, The University of Arizona, August 2006; *Some rigorous results for a simple model of the adiabatic piston problem.*

Séminaire interne, École normale supérieure de Lyon, France, December 2005; *The notorious piston problem and some recent results obtained by averaging.*

Seminar in Nonlinear Systems, Stevens Institute of Technology, November 2005; *The notorious piston problem and some recent results obtained by averaging.*

Young Person's Seminar, Time at work trimester on dynamical systems, Institut Henri Poincaré, Paris, France, July 2005; *Anosov's averaging theorem and an application.*

Graduate Student- Postdoc Seminar, Courant Institute of Mathematical Sciences, April 2005; *Dynamical systems research group* (with Kevin Lin and William Ott).

Dynamical Systems Seminar, Courant Institute of Mathematical Sciences, March 2005; *Ergodicity and averaging: A discussion of a theorem due to Anosov and a possible application.*

Extended Professional Travel

Fall	2005	École normale supérieure de Lyon, Unité de mathématiques pures et appliquées, France
Summer	2005	Time at work trimester on dynamical systems, Institut Henri Poincaré, Paris, France

Graduate Coursework

- ❑ Dynamical Systems
- ❑ Ergodic Theory
- ❑ Probability/Limit Theorems
- ❑ Partial Differential Equations
- ❑ Ordinary Differential Equations
- ❑ Harmonic Analysis
- ❑ Real Analysis
- ❑ Complex Analysis
- ❑ Differential Geometry
- ❑ Topology
- ❑ Linear Algebra

Physical Sciences Research Experience

2001–2002	Production of discrete variable representation sets. Advisor: Robert Littlejohn, Department of Physics, University of California at Berkeley.
2000–2001	Creation of signal processing algorithms for the Gamma Ray Energy Tracking Array. Advisor: Kai Vetter, Nuclear Structures Group, E. O. Lawrence Berkeley National Laboratory.
1999–2000	Laser spectroscopy investigations of the reaction dynamics of HFCO. Advisor: C. Bradley Moore, Department of Chemistry, University of California at Berkeley.

Relevant Skills

Languages: English, French

Proofreading: Prepared Jürgen Moser and Eduard J. Zehnders' *Notes on Dynamical Systems* for publication in the Courant Lecture Notes series. (2004)

Professional Affiliations

American Mathematical Society (since 2008)

References

Dmitry Dolgopyat, Professor of Mathematics, University of Maryland, College Park, (301) 405-5118, dmitry@math.umd.edu (Postdoctoral Sponsor)

David Lay, Professor and Distinguished Scholar-Teacher of Mathematics (emeritus), University of Maryland, College Park, (301) 405-5473, lay@math.umd.edu (Teaching Reference)

Carlangelo Liverani, Professor of Mathematics, Università degli Studi di Roma "Tor Vergata," Rome, Italy, liverani@mat.uniroma2.it

Domokos Szász, Professor of Stochastics, Mathematical Institute, Technical University, Budapest, Hungary, szasz@math.bme.hu

Lai-Sang Young, The Henry and Lucy Moses Professor of Science, Courant Institute of Mathematical Sciences, New York University, (212) 998-3286, lsy@cims.nyu.edu (Doctoral Advisor)