

LEONID L. RUBCHINSKY

Curriculum Vitae

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ADDRESS

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EDUCATION

Degrees

Ph.D., Physics (nonlinear dynamics)	Institute for Applied Physics, Russian Academy of Sciences, Nizhny Novgorod, Russia, 2000 (advisors: M.I. Rabinovich and M.M. Sushchik Sr.)
M.S., Physics	University of California, San Diego, 1997
B.S., Physics	University of Nizhny Novgorod, Russia, 1995

Non-degree training

Workshop on Dynamics of Neural Networks: From Biophysics to Behavior.	University of California, Santa Barbara, 2001
Workshop on Dynamical Systems	International Center for Theoretical Physics, Italy, 1998

ACADEMIC APPOINTMENTS

2010 –	Associate professor
2004 – 2010	Assistant professor Department of Mathematical Sciences, Indiana University – Purdue University Indianapolis, and Stark Neurosciences Research Institute, Indiana University School of Medicine
2001 – 2004	Postdoctoral Research Fellow, University of California, Davis (postdoctoral mentors: K.A. Sigvardt and N. Kopell)
1997 – 2001	Junior Research Associate Institute for Applied Physics, Russian Academy of Science
1999 – 2000	Lecturer University of Nizhny Novgorod, Nizhny Novgorod, Russia
1995 – 1997	Research Assistant, Teaching Assistant University of California, San Diego
1994 – 1995	Research Assistant Institute for Applied Physics, Russian Academy of Science

OTHER PROFESSIONAL EXPERIENCE

2003 – 2004 Consulting Electrophysiologist for Functional Neurosurgery
Kaiser Permanente Medical Group, Sacramento, CA

RESEARCH INTERESTS

Applied dynamical systems and biomathematics:

dynamics of coupled oscillators and neuronal assemblies,
synchronization, oscillations, and information processing in neural networks

Physiology of Basal Ganglia and Parkinson's disease:

motor control and physiology of basal ganglia in health and Parkinson's disease

Physiology of cortical networks in addiction

AWARDS AND FELLOWSHIPS

- IUPUI Athletics Favorite Professor Award (2006, 2010)
- Open Society Institute (Moscow, Russia) Grant (2000)
- Razuvaev Fellowship of Nizhny Novgorod Region Administration (1998, 1999)
- Soros International Science Educational Program Fellowships (1995, 1998-2000)
- The Russian Presidential Fellowship (1995)

FUNDING

- Indiana Clinical and Translational Sciences Institute grant “Closed-Loop Adaptive Deep Brain Stimulation for Parkinson’s disease”, project role: PI, 2014-2017.
- Purdue Research Foundation International Travel Grant, project role: PI, 2015.
- IU Collaborative Research Grant “Relating electrophysiology and symptoms of Parkinson’s disease”, role on the project: PI, 2013-2014.
- IUPUI Institute of Mathematical Modeling and Computational Sciences Grant to Enhance Interdisciplinary Research and Education (iM2CS-GEIRE) “Transient neurodynamics of behavioral sensitization”, role on the project: PI, 2012-2013.
- NIH/NINDS R01NS067200 “Dynamics and mechanisms of rhythmic activity in basal ganglia” (part of NSF/NIH Collaborative Research in Computational Neuroscience), project role: PI, 2009-2013.
- Purdue Research Foundation International Travel Grant, project role: PI, 2013.
- Indiana University Research Support Funds Grant “Dynamics of cortico-subcortical oscillations in Parkinson’s disease”, project role: PI, 2012-2013.
- Indiana University Research Support Funds Grant “Activity of Basal Ganglia Networks in Parkinson’s disease: laying the foundation for adaptive brain stimulation”, project role: PI, 2007-2008.
- Purdue Research Foundation “Mathematical modeling of tremor dynamics in Parkinson’s disease”, project role: PI, 2006.

PROFESSIONAL ACTIVITIES AND SERVICE TO RESEARCH COMMUNITY

Proposal review panelist

- Panelist for Collaborative Research in Computational Neuroscience (National Science Foundation/National Institutes of Health/German Federal Ministry for Education and Research)
- Panelist for EU Joint Programme – Neurodegenerative Disease Research
- Grant Reviewer for Medical Research Council, UK
- Grant reviewer for Natural Sciences and Engineering Research Council of Canada
- Review Board Member for Bernstein Award for Computational Neuroscience of the German Federal Ministry of Education and Research (BMBF)
- Grant reviewer for Oak Ridge Associated Universities
- Grant reviewer for Neurological Foundation of New Zealand

Editorial Boards

- Frontiers in Computational Physics, Associate Editor

Professional society service

- Organization for Computational Neuroscience Board of Directors member (2017-2019).
- Organization for Computational Neuroscience Program Committee member (2012, 2013, and 2014 annual meetings).
- Organizer of Student poster award competition at the Annual Computational Neuroscience Meeting
- Reviewer for the Annual Computational Neuroscience Meeting

Organization of Professional Meetings

- Co-organizer of “Mathematical Modeling Basal Ganglia”, minisymposium at the SIAM conference on application of dynamical systems, Snowbird, UT, May 2015.
- Co-organizer of “Dynamics of Basal Ganglia in Brain Disorders”, minisymposium at the SIAM conference on application of dynamical systems, Snowbird, UT, May 2013.
- Co-organizer of “Neuronal and network dynamics in basal ganglia”, minisymposium at the SIAM conference on application of dynamical systems, Snowbird, UT, May 2011.
- Co-organizer of “Phase locking in the presence of biological noise”, workshop at the 19th Annual Computational Neuroscience Meeting CNS*2010, San Antonio, TX, July 2010.
- Co-organizer of “Basal Ganglia dynamics vs. Basal Ganglia function and dysfunction”, workshop at the 17th Annual Computational Neuroscience Meeting CNS*2008, Portland, Oregon, July 2008.
- Co-organizer of “Theoretical approaches to basal ganglia function”, two-day minisymposium at the 13th Annual Computational Neuroscience Meeting CNS*2004, Baltimore, July 2004.

Manuscript reviewer

- Biological Cybernetics
- BioSystems
- Brain Research
- Chaos
- Clinical Neurophysiology
- Computers in Biology and Medicine
- European Journal of Neuroscience
- Europhysics Letters
- Frontiers in Neuroscience
- IEEE Transactions on Circuits and Systems
- IEEE Transactions on Biomedical Engineering
- Journal of Computational Neuroscience
- Journal of Neural Engineering
- Journal of Neurophysiology
- Journal of Physiology
- Mathematical Biosciences
- Neural Networks
- Neuroscience and Biobehavioral Reviews
- Nonlinear Dynamics
- Physical Review E
- Physical Review Letters
- Physics Letters A
- Physiological Measurement
- PLOS Computational Biology
- PLOS ONE
- Science Translational Medicine
- Scholarpedia
- Book reviewer for Taylor and Francis
- Book reviewer for Pearson
- Book reviewer for Wiley

Affiliation with Centers and Institutes

- Stark Neurosciences Research Institute, Indiana University School of Medicine, Primary Investigator (2004-)
- Biocomplexity Institute, Indiana University, Bloomington, Affiliated Researcher (2004-)
- Center for Mathematical Biosciences, Indiana University Purdue University Indianapolis, Affiliate (2007-)
- Member of the IUPUI Institute for Mathematical Modeling and Computational Science (2012-)
- Indiana University Network Science Institute, Affiliated Faculty (2014-)

Professional society membership

- Society for Neuroscience
- Organization for Computational Neuroscience

PROFESSIONAL ACTIVITIES AND SERVICE AT HOME INSTITUTIONS

University Service

- Reviewer for Indiana University Collaborative Research Grants Program (2015-)
- Reviewer for Brain Research Foundation pre-proposals (2015-2016)
- Neuroscience Undergraduate Program Advisory Committee member (2014-)
- Indiana University Review Committee for NSF pre-proposals (2013)
- Indiana University Vice President for Research Advisory Board member (2012-)
- Steering Committee member of the Institute for Mathematical Modeling and Computational Science (2012-)
- School of Science Dean's Advisory Council retreat (Indiana University Purdue University Indianapolis, 2006)
- Young Scientists Council (Institute for Applied physics, Russian Academy of Science, 2000-2001)

Seminar organization

- Organizer of a seminar series in mathematical neuroscience (Indiana University Purdue University Indianapolis), 2004 - present.

Department Service

- Member of the departmental Advisory Committee (2012-2016)
- Chair of the departmental Colloquium Committee (2015-), member of the committee (2005-2006, 2007-2011, 2014-)
- Member of the departmental hiring committee (2010-2011, 2015-2016)
- Departmental initiative to improve applied mathematics programs (2010).
- Member of the departmental Graduate Committee (2007-2011, 2013-2015)
- Member of the departmental Undergraduate Committee (2006-2007, 2011-2012, 2016-)
- Member of the departmental Technology Committee (2011-2012)
- Member of the departmental High School Mathematics Contest Committee (2004-2007)
- Developed mathematical and computational neuroscience part of the proposal for the Center for Mathematical Biosciences – Signature Center at IUPUI. The proposal was supported in January 2007.

TEACHING AND MENTORING EXPERIENCE

Teaching, advising and curriculum development

- 2004- IUPUI and Indiana University
- Teaching:
 - Calculus for technology
 - Calculus for life sciences
 - Calculus and Analytical Geometry
 - Vector calculus
 - Integrative Neurophysiology (medical neuroscience graduate program)
 - Introduction to Biomathematics
 - Multivariate Calculus
 - Windows on Science
 - Courses and Programs development:
 - Calculus for life Sciences. Undergraduate course
 - Integrative Neurophysiology. Graduate course
 - Introduction to Biomathematics. Graduate course
 - Computational Neuroscience. Undergraduate course
 - Neuroscience BS program
 - Course coordination:
 - Calculus for life Sciences. Undergraduate course
 - Faculty member:
 - Mathematical Sciences, Indiana University Purdue University Indianapolis
 - Medical Neuroscience graduate program Indiana University School of Medicine
 - Graduate studies at Biocomplexity, Indiana University
 - Advising:
 - Faculty advisor to applied mathematics majors
- 2003-2004 University of California, Davis
- Supervised student research assistants
- 1999-2000 University of Nizhny Novgorod, Nizhny Novgorod, Russia
- Taught an introductory course on mathematical modeling of neural systems dynamics for graduate students
- 1996-1997 University of California, San Diego
- Teaching assistant

Students and postdoctoral fellows mentored

- Shivakeshavan Ratnadurai-Giridharan, PhD (postdoctoral mentor, 2014-2016)
- Sungwoo Ahn, PhD (postdoctoral mentor, 2010-2014)
- Choongseok Park, PhD (postdoctoral mentor, 2007-2011)
- Andrey Dovzhenok, PhD (PhD advisor, 2008-2012)
- Joel Zirkle (PhD advisor, 2016-)
- Chung Cheung (PhD advisor, 2014-)
- Simone Cassani, PhD (PhD committee member, 2014-2016)
- Yeonjoo Yoo, PhD (PhD committee member, 2014-2016)
- Abolhassan Behrouzvaziri (PhD committee member, 2014-)
- Daniele Prada, PhD (PhD committee member, 2015)
- Jessica Solfest (REU mentor, 2012)
- Abhishek Ray, MD (REU mentor, 2003-2004)

REU mentoring

- Mentor at Undergraduate Summer Research Program at the Mathematical Biosciences Institute at Ohio State University.

Other mentoring

- Postdoc Mentor at the Mathematical Biosciences Institute at Ohio State University.
- Mentor for Dr. C. Park (North Carolina A&T State University) on a Historically Black Colleges and Universities – Undergraduate Program NSF award