

Curriculum Vitae
Armen Stepanyants

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Education

Ph.D. Theoretical Condensed Matter Physics, Department of Physics, University of Rhode Island (1999)

M.S. Theoretical Condensed Matter Physics, Institute of High Energies and Moscow Institute for Physics and Technology (1994)

B.S. Applied Physics, Department of General and Applied Physics, Moscow Institute for Physics and Technology (1992)

Employment history

2010-present	Associate Professor , Department of Physics, Northeastern University
2004-2010	Assistant Professor , Department of Physics, Northeastern University
2000-2004	Postdoctoral Research Associate , Theoretical Neuroscience, Cold Spring Harbor Laboratory
1999-2000	Postdoctoral Research Associate , Civil and Environmental Engineering, MIT
1995-1999	Research Assistant , Department of Physics, University of Rhode Island
1994-1995	Teaching Assistant , Department of Physics, University of Rhode Island
1992-1994	Research Assistant , Institute of High Energies, Protvino, Russia

Honors and awards

- NIH/NINDS K25 Mentored Quantitative Career Development Award (2004-2009)
- Shared first prize at Digital Reconstruction of Axonal and Dendritic Morphology (DIADEM) challenge (2010). DIADEM challenge is an international competition organized and sponsored by the Allen Institute for Brain Science, the Howard Hughes Medical Institute, George Mason University, and the NIH.

Selected publications

1. Gala, R., Lebrecht, D., Sahlender, D.A., Jorstad, A., Knott, G., Holtmaat, A., and Stepanyants, A., Computer assisted detection of axonal bouton structural plasticity in *in vivo* time-lapse images, *eLife*, 6:e29315 (2017)
2. Chapeton, J., Gala, R., and Stepanyants, A., Effects of homeostatic constraints on associative memory storage and synaptic connectivity of cortical circuits, *Frontiers in Computational Neuroscience*, 9:74 (2015)

3. Gala, R., Chapeton, J., Jitesh, J., Bhavsar, C., and Stepanyants, A., Active learning of neuron morphology for accurate automated tracing of neurites, *Frontiers in Neuroanatomy*, 8:37 (2014)
 4. Chapeton, J., Fares, T., LaSota, D., and Stepanyants, A., Efficient associative memory storage in cortical circuits of inhibitory and excitatory neurons, *PNAS*, 109(51): E3614–E3622 (2012)
 5. Chothani, P., Mehta, V., and Stepanyants, A. Automated tracing of neurites from light microscopy stacks of images, *Neuroinformatics*, 9(2-3): 263–278 (2011)
 6. Fares, T. and Stepanyants, A., Cooperative synapse formation in the neocortex, *PNAS*, 106(38): 16463-16468 (2009)
 7. Wen, Q., Stepanyants, A., Elston, G.N., Grosberg, A.Y., and Chklovskii, D.B., Maximization of the connectivity repertoire as a statistical principle governing the shapes of dendritic arbors., *PNAS*, 106(30): 12536-12541 (2009)
 8. Stepanyants, A., Martinez, L.M., Ferecskó, A.S., and Kisvárdy, Z.F., The fractions of short- and long-range connections in the visual cortex., *PNAS*, 106(9): 3555-3560 (2009)
 9. *Escobar, G., *Fares, T., and Stepanyants, A., Structural plasticity of circuits in cortical neuropil, *J. Neuroscience*, 28(34): 8477-8488 (2008)
 10. Stepanyants, A. and Chklovskii, D.B., Neurogeometry and Potential Synaptic Connectivity, *Trends in Neuroscience*, 28(7), 387-394 (2005)
 11. *Shepherd, G.M.G., *Stepanyants, A., Bureau, I., Chklovskii, D.B., Svoboda, K., Geometric and functional organization of cortical circuits, *Nature Neuroscience*, 8(6), 782-790 (2005)
 12. Stepanyants, A., Tamás, G., and Chklovskii, D.B., Class-specific Features of Neuronal Wiring, *Neuron*, 43, 251-259 (2004)
 13. Stepanyants, A., Hof, and P.R., Chklovskii, D.B., Geometry and Structural Plasticity of Synaptic Connectivity, *Neuron*, 34, 275-88 (2002)
- (* equal contributors)

Software

1. **Neural Circuit Tracer** – open source software for automated tracing of neurites from light microscopy stacks of images
2. **BoutonAnalyzer** – open source software for detection and tracking of structural changes in *en passant* boutons in time-lapse light-microscopy stacks of images

Other experience and memberships

- Member of the Organization for Computational Neuroscience (2010 - present)
- Member of the Society for Neuroscience (2000 - present)
- Reviewing editor for Frontiers in Computational Neuroscience (2009 - present)
- Reviewing editor for Frontiers in Neural Circuits (2008 - present)
- Editorial board member of the Journal of Brain Structure and Function (2006 - 2013)