Subhaneil Lahiri

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Postdoctoral positions

Ganguli Lab: (Postdoctoral Fellow, Stanford University, Stanford CA, March 2012 – present).
Theoretical and computational Neurobiology.

Samuel Lab: (Postdoctoral Fellow, Harvard University, Cambridge MA, July 2009 – August 2011).
Behavioral Neuroscience: Performing quantitative analysis of brain and behavior in the *Drosophila* larva.

Education

Harvard University, Cambridge MA: Ph.D., Physics, June 2009.
Ph.D. Thesis: Black holes from fluid mechanics. Advisor: Shiraz Minwalla.

Tata Institute, Mumbai, India: Visiting student, Spring 2006 – Spring 2007. Research in theoretical physics.

Oxford University, Oxford, UK: M.Phys., 1st class honors, Merton college, 2003.
M.Phys. Project: Monte Carlo simulations of galactic heating.

Publications

[1] **S. Lahiri**, P. Gao, and S. Ganguli, "Random projections of random manifolds," `arXiv:1607.04331 [stat.ML]`.

[2] B. Poole, **S. Lahiri**, M. Raghu, J. Sohl-Dickstein, and S. Ganguli, "Exponential expressivity in deep neural networks through transient chaos," `arXiv:1606.05340 [stat.ML]`.

[3] **S. Lahiri**, J. Sohl-Dickstein, and S. Ganguli, "A universal tradeoff between power, precision and speed in physical communication," `arXiv:1603.07758 [cond-mat.stat-mech]`.

[4] T. B. Nguyen-Vu*, G. Q. Zhao*, **S. Lahiri**, A. Suvrathan, H. Lee, S. Ganguli, C. J. Shatz, and J. L. Raymond, "Understanding both enhanced and impaired learning with enhanced plasticity: a saturation hypothesis." submitted, 2016.

[5] **S. Lahiri** and S. Ganguli, "A memory frontier for complex synapses," in *Adv. Neural Inf. Process. Syst. 26*, pp. 1034–1042. NIPS, 2013.

[6] M. Advani, **S. Lahiri**, and S. Ganguli, "Statistical mechanics of complex neural systems and high dimensional data," *J. Stat. Mech.* **2013** (Jan., 2013) P03014, `arXiv:1301.7115 [q-bio.NC]`.

[7] **S. Lahiri***, K. Shen*, M. Klein, A. Tang, E. Kane, M. Gershow, P. Garrity, and A. D. T. Samuel, "Two alternating motor programs drive navigation in *Drosophila* larva," *PLoS ONE* **6** (2011) e23180.

[8] J. Bhattacharya* and **S. Lahiri***, "Lumps of plasma in arbitrary dimensions," *JHEP* **1008** (2010) 073, `arXiv:0903.4734 [hep-th]`.

[9] S. Bhattacharyya*, **S. Lahiri***, R. Loganayagam*, and S. Minwalla*, "Large rotating AdS black holes from fluid mechanics," *JHEP* **09** (2008) 054, `arXiv:0708.1770 [hep-th]`.

[10] **S. Lahiri*** and S. Minwalla*, "Plasmarings as dual black rings," *JHEP* **05** (2008) 001, `arXiv:0705.3404 [hep-th]`.

[11] I. Biswas*, D. Gaiotto*, **S. Lahiri***, and S. Minwalla*, "Supersymmetric states of $\mathcal{N} = 4$ Yang-Mills from giant gravitons," *JHEP* **12** (2007) 006, `arXiv:hep-th/0606087`.

* Equal contribution.

Awards and Fellowships

Highest rated abstract out of ∼500 submissions (Computational and Systems Neuroscience, Feb. 2014).

Winner of the Neural Information Processing Systems Outstanding Paper Award, given to 3 papers out of 1420 submissions (Neural Information Processing Systems, Dec. 2013).

Stanford Bio-X Genentech Fellowship (Stanford University, Stanford CA, 2013).

Certificate of distinction in teaching (Harvard University, Cambridge MA, Spring 2008).

Vineer Bhansali Graduate Travel Fellowship (Harvard University, Cambridge MA, 2006).

James Mills Pierce Fellowship (Harvard University, Cambridge MA, 2003).

Scott Prize for best performance in M.Phys. examination (Oxford University, Oxford, UK, 2003).

Commendation for prelims practical work (Oxford University, Oxford, UK, 2000).

Teaching experience

SERC School Tutor: Taught at an intensive school in high energy theoretical physics for graduate students in India (Hyderabad University, Hyderabad, India, 2007).

Harvard University Teaching Fellow: Taught physics classes for undergraduates in physics and other departments (Harvard University, Cambridge MA, Fall 2004 – Fall 2005, Spring 2008 – Fall 2010).

Harvard Summer Teaching Fellow: Taught physics daily to high school students and undergraduates from various colleges (Harvard University, Cambridge MA, 2005).

Conference presentations

Computational and Systems Neuroscience (Cosyne): Salt Lake City UT. February 25-28, 2016.
Talk: "Optimal synaptic strategies for different timescales of memory".
Poster: "A universal tradeoff between energy, speed and precision in neural communication".

Computational and Systems Neuroscience (Cosyne): Salt Lake City UT. February 27 - March 2, 2014.
Talk: "Modeling enhanced and impaired learning with enhanced plasticity".

Neural Information Processing Systems (NIPS): Lake Tahoe NV. Dec 5-8, 2013 .
Poster: "A memory frontier for complex synapses".

Sloan-Swartz Centers for Theoretical Neurobiology Annual Meeting: Brandeis University, Waltham MA. July 26-28, 2013 .
Talk: "Understanding impaired learning with enhanced plasticity".

Computational and Systems Neuroscience (Cosyne): Salt Lake City UT. February 28 - March 3, 2013.
Poster: "A general theory of learning and memory with complex synapses".

Sloan-Swartz Centers for Theoretical Neurobiology Annual Meeting: UC San Diego, La Jolla CA. June 27-29, 2012.
Poster: "Learning and memory with complex synapses".

1st Asian Winter School on String Theory: KIAS, Seoul, S. Korea. January 8–19, 2007.
Talk: "Giant gravitons and the supersymmetric states of $\mathcal{N} = 4$ Yang-Mills".