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Subhaneil Lahiri

Professional appointments

Ganguli Lab: Research Scientist, Jan. 2016 – present; Postdoctoral Scholar, Mar. 2012 – Jan. 2016.
Ginzton Laboratory, Stanford University. Theoretical and computational neurobiology.

Samuel Lab: Postdoctoral Fellow, Cambridge MA, USA, Jul. 2009 – Aug. 2011, Harvard University.
Behavioural Neuroscience: Performing quantitative analysis of brain and behaviour in larval *Drosophila*.

Education

Harvard University, Cambridge MA, USA: Ph.D., Physics, 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 honours, Merton college, 2003.
M.Phys. Project: Monte Carlo simulations of galactic heating.

Publications

E Trautmann, S Stavisky, **S Lahiri**, K Ames, M Kaufman, DJ O'Shea, S Vyas, X Sun, S Ryu, S Ganguli, and K Shenoy, "Accurate estimation of neural population dynamics without spike sorting", *Neuron* (Apr. 2019), in press. `bioRxiv:229252`.

S Lahiri, P Gao, and S Ganguli, "Random projections of random manifolds", (July 2016). `arXiv:1607.04331 [stat.ML]`.

S Lahiri, J Sohl-Dickstein, and S Ganguli, "A universal tradeoff between power, precision and speed in physical communication", (2016). `arXiv:1603.07758 [cond-mat.stat-mech]`.

TDB Nguyen-Vu*, GQ Zhao*, **S Lahiri***, RR Kimpo, H Lee, S Ganguli, CJ Shatz, and JL Raymond, "A saturation hypothesis to explain both enhanced and impaired learning with enhanced plasticity", *eLife* **6** (Feb. 2017), e20147.

B Poole, **S Lahiri**, M Raghu, J Sohl-Dickstein, and S Ganguli, "Exponential expressivity in deep neural networks through transient chaos", in: *Adv. Neural Inf. Process. Syst.* **29**, (2016), pp. 3360–3368. `arXiv:1606.05340 [stat.ML]`.

S Lahiri and S Ganguli, "A memory frontier for complex synapses", in: *Adv. Neural Inf. Process. Syst.* **26**, (2013), pp. 1034–1042.

M Advani, **S Lahiri**, and S Ganguli, "Statistical mechanics of complex neural systems and high dimensional data", *J. Stat. Mech.* **2013**.03 (Jan. 2013), P03014. `arXiv:1301.7115 [q-bio.NC]`.

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

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

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

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

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

* Equal contribution.

Awards and Fellowships

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

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, USA, 2013).

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

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

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

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

Conference presentations

Computational and Systems Neuroscience (Cosyne, Lisbon, Portugal, Feb. 28–Mar. 3, 2019).
Poster: "Accurate estimation of neural population dynamics without spike sorting",
by **S Lahiri**, EM Trautmann, SD Stavisky, KC Ames, MT Kaufman, DJ O'Shea, S Vyas, X Sun, SI Ryu, S Ganguli, and KV Shenoy.

Neural Information Processing Systems (NeurIPS, Barcelona, Spain, Dec. 5–10, 2016).
Poster: "Exponential expressivity in deep neural networks through transient chaos",
by B Poole, **S Lahiri**, M Raghu, J Sohl-Dickstein, and S Ganguli.

Computational and Systems Neuroscience (Cosyne, Salt Lake City, UT, USA, Feb. 25–28, 2016).
Talk: "Optimal synaptic strategies for different timescales of memory",
by **S Lahiri** and S Ganguli.
Poster: "A universal tradeoff between energy, speed and precision in neural communication",
by **S Lahiri**, J Sohl-Dickstein, and S Ganguli.

Computational and Systems Neuroscience (Cosyne, Salt Lake City, UT, USA, Feb. 27–Mar. 2, 2014).
Talk: "Modeling enhanced and impaired learning with enhanced plasticity",
by **S Lahiri**, TDB Nguyen-Vu, GQ Zhao, A Suvrathan, H Lee, S Ganguli, CJ Shatz, and JL Raymond.

Neural Information Processing Systems (NeurIPS, Lake Tahoe NV, USA, Dec. 5–8, 2013).
Talk and poster: "A memory frontier for complex synapses",
by **S Lahiri** and S Ganguli.

Sloan-Swartz Centers Annual Meeting (Brandeis University, Waltham MA, USA, July 26–28, 2013).
Talk: "Understanding impaired learning with enhanced plasticity",
by **S Lahiri**, TDB Nguyen-Vu, GQ Zhao, A Suvrathan, H Lee, S Ganguli, CJ Shatz, and JL Raymond.

Computational and Systems Neuroscience (Cosyne, Salt Lake City, UT, USA, Feb. 28–Mar. 3, 2013).
Poster: "A general theory of learning and memory with complex synapses",
by **S Lahiri** and S Ganguli.

Sloan-Swartz Centers Annual Meeting (UC San Diego, La Jolla CA, USA, June 27–29, 2012).
Poster: "Learning and memory with complex synapses",
by **S Lahiri** and S Ganguli.

1st Asian Winter School on String Theory (KIAS, Seoul, S. Korea, Jan. 8, 2007).
Talk: "Giant gravitons and the supersymmetric states of $\mathcal{N} = 4$ Yang-Mills",
by **S Lahiri**, I Biswas, D Gaiotto, and S Minwalla.

Teaching experience

SERC School Tutor: Taught at an intensive school in high energy theoretical physics for postgraduate 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, USA, Autumn 2004 – Autumn 2005, Spring 2008 – Autumn 2010).

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