

Vijay Singh

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Postdoctoral Fellow
Computational Neuroscience Initiative
University of Pennsylvania
Philadelphia, PA, USA

Email: vsin@sas.upenn.edu
[Google Scholar](#)
Phone: 404-951-0558

EDUCATION

2010-2015	Ph.D. (Physics)	Emory University, Atlanta, GA, USA. Thesis Adviser: Ilya Nemenman
2008-2010	M.Sc. (Physics)	Indian Institute of Technology, Kanpur, India.
2005-2008	B.Sc.(H) (Physics)	St. Stephen's College, Delhi University, India.

EMPLOYMENT

2015 - Postdoctoral Fellow University of Pennsylvania, Philadelphia, PA, USA.

PUBLICATIONS

Published

5. **V Singh**, M. Tchernookov, I Nemenman. *Effects of receptor correlations on molecular information transmission.*(August, 2016) ([PRE 94, 022425](#)) ([arXiv](#))
4. **V Singh**, C T Brunson, S Boettcher. *From Explosive to Infinite-Order Transitions on a Hyperbolic Network.*(November, 2014) ([PRE 90, 052119](#)) ([arXiv](#))
3. **V Singh**, M. Tchernookov, R Butterfield and I Nemenman. *Continuum Dynamics Model of the Primary Visual Cortex for Contour Detection.* (October, 2014) ([PLOS ONE](#)), ([arXiv](#))
2. **V Singh**, S Boettcher. *Scaling of Clusters near Discontinuous Percolation Transitions in Hyperbolic Networks.* (July, 2014) [PRE 90, 012117](#)
1. S Boettcher, **V Singh** and RM Ziff. *Ordinary Percolation with discontinuous transitions* (April, 2012). [Nature Communications 3, 787](#)

In Review

1. **V Singh**, Ilya Nemenman. *Accurate sensing of multiple ligands with a single receptor.* [arXiv](#)

HONORS, AWARDS AND FELLOWSHIPS

2015	Shirley Chan Student Travel Award	American Physical Society
2014	Professional Development Training Award	Emory University
2014, 2015	SGA Travel Grant	Emory University
2014	Computational Neuroscience Travel Grant	Emory University
2012	ICAM Travel Grant	ICAM, Davis
2012-15	Professional Development Travel Award	Emory University
2009, 2010	50% Tuition Waiver	IIT, Kanpur, India
2009	Shrikant Mishra Memorial Scholarship	IIT, Kanpur, India
2008	Best Final Year Physics Student	St. Stephen's College, India
2006-08	Delhi University Science Fellowship	Delhi University, India
2006	Young Science Fellowship	IISc, Bangalore, India
2006	NIUS Scholarship	HBCSE, TIFR, India

CONFERENCE ACTIVITY

2015 August	<i>Sensing Multiple Ligands with a Single Receptor.</i> 9th q-bio Conference, Virginia Tech, Blacksburg, Virginia.
2015 March	<i>Information Transmission by Receptors Correlated through Ligand Diffusion.</i> STEM Symposium, Emory University, Atlanta, GA.
2015 March	<i>Sensing Multiple Ligands with a Single Receptor.</i> APS March Meeting, San Antonio, TX.
2014 August	<i>Extrinsic and Intrinsic Correlations in Molecular Information Transmission</i> 8th q-bio Conference, Santa Fe, NM
2014 March	<i>Can correlations among receptors affect the information about the stimulus?</i> APS March Meeting, Denver, CO
2013 March	<i>Continuum neural dynamics models for visual object identification.</i> APS March Meeting, Baltimore, MD
2012 March	<i>Ordinary Percolation with Discontinuous Transitions.</i> APS March Meeting, Boston, MA

INVITED TALKS

2015	Collective sensing in biological networks, University of Texas, Austin, TX.
2015	Collective sensing in biological networks, University of Pennsylvania, Philadelphia, PA.
2015	Collective sensing in biological networks, Simons Center for Data Science, New York, NY.
2015	Collective sensing in biological networks, University of California, Davis, CA.
2015	Continuum Model Of Primary Visual Cortex For Contour Detection, Center For Brain Science, Harvard University, Boston, MA.

TEACHING EXPERIENCE

2016	Theoretical and Computational Neuroscience	Co-Teacher
2013	Summer Undergraduate Research Experience	Graduate Mentor
2012	Introduction to Physics PHY 142	Teaching Assistant
2011	Introduction to Physics PHY 142	Laboratory Instructor
2010	Introduction to Physics PHY 141	Laboratory Instructor

RESEARCH INTERESTS

- Neuroscience (Theoretical and Computational)
- Biological Physics
- Statistical Physics
- Information Theory
- Complex Networks

ADDITIONAL TRAINING

2015	Methods in Computational Neuroscience, (Summer School) Marine Biology Laboratories, Woods hole, USA.
2014	Winter School in Quantitative Systems Biology International Center for Theoretical Physics, Italy.
2014	Computational Approaches to Memory & Plasticity, (Summer School) National Center for Biological Sciences, India.
2013	Statistical physics, Optimization, Inference and Message-Passing algorithms Ecole de Physique des Houches, France.
2012	Emergent Order in Biology, (Summer School) Institut d'études scientifiques de Cargèse, Cargese, France.

PROFESSIONAL MEMBERSHIPS

2011 -	American Physical Society
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