

Jonathan Platkiewicz

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Education

Ecole Normale Supérieure PhD Computational Neuroscience	2006 – 2010
Ecole Normale Supérieure Paris-Saclay MS Cognitive Science	2004 – 2005
Ecole Normale Supérieure Paris-Saclay BS Physics	2002 – 2004

Research Experience

Department of Mathematics, City College of New York Neuroscience Institute, New York University Postdoctoral Fellow with Asohan Amarasingham, in collaboration with the Buzsáki Lab Microcircuit Connectivity Inference from Spike Data (Statistics Applied to Neurophysiology)	2014 – present
School of Mechanical and Aerospace Engineering, Cornell University Fulbright Visitor with Hod Lipson (1 Semester) Haptic Edge Detection (Mathematics Applied to Contact Mechanics)	2013 – 2014
Institute of Intelligent Systems and Robotics, Université Pierre et Marie Curie Postdoctoral Fellow with Vincent Hayward Computational Theory of Haptic Perception (Mathematics Applied to Haptics)	2010 – 2013
School of Engineering and Applied Sciences, Harvard University Graduate Visitor with Michael Brenner (1 Semester) Diversity of Voltage-Gated Sodium Channels (Mathematics Applied to Systems Biology)	2008 – 2009
Institute of Cognitive Studies and Department of Computer Science Ecole Normale Supérieure Graduate Fellow with Romain Brette and Nicolas Brunel Dynamics of Neuronal Excitability (Mathematics Applied to Neurophysiology)	2006 – 2010
Center for Research in Applied Epistemology, Ecole Polytechnique Research Assistant with Paul Bourgin Physics of Clapping Synchronization (Mathematics Applied to Social Systems)	2005
School of Engineering and Applied Sciences, Harvard University Research Assistant with L Mahadevan Statistical Physics Laboratory, Ecole Normale Supérieure Research Assistant with Steffen Bohn and Yves Couder Pattern Formation in Non-Newtonian Fluids (Mathematics Applied to Fluid Mechanics)	2003 - 2004

Publications

Peer-Reviewed Journals

- **Platkiewicz J**, Stark E, and Amarasingham A (2017). Spike-Centered Jitter Can Mistake Temporal Structure. *Neural Computation*, 29 : 1-27.
- **Platkiewicz J**, Lipson H, and Hayward V (2016). Haptic Edge Detection Through Shear. *Scientific Reports*, 6(23551). doi : 10.1038/srep23551
- **Platkiewicz J** and Hayward V (2014). Perception-Action Dissociation Generalizes to the Size-Inertia Illusion. *Journal of Neurophysiology*, 111(7) : 1409-1416
- **Platkiewicz J** and Brette R (2011). Impact of Fast Sodium Channel Inactivation on Spike Threshold Dynamics and Synaptic Integration. *PLoS Computational Biology*, 7(5) : e1001129. doi : 10.1371/journal.pcbi.1001129
- Rossant C, Goodman DF, Fontaine B, **Platkiewicz J**, Magnusson AK, and Brette R (2011). Fitting Neuron Models to Spike Trains. *Frontiers in Neuroscience*, 5 :9. doi : 10.3389/fnins.2011.00009
- **Platkiewicz J** and Brette R (2010). A Threshold Equation for Action Potential Initiation. *PLoS Computational Biology*, 6(7) : e1000850. doi : 10.1371/journal.pcbi.1000850
- Rossant C, Goodman D F M, **Platkiewicz J**, and Brette R (2010). Automatic Fitting of Spiking Neuron Models to Electrophysiological Recordings. *Frontiers in Neuroinformatics*, doi : 10.3389/neuro.11/002.2010
- Bohn S, **Platkiewicz J**, Andreotti B, Adda Bedia M, and Couder Y (2005). Hierarchical Crack Pattern as Formed by Successive Domain Divisions. II. Intrinsic Transition from Determinism to Disorder. *Physical Review E*, 71(4) :046215

Grants, Awards & Honors

U.S. Department of Defense Research and Education Grant (co-PI ; PI : Asohan Amarasingham, CUNY)	2015 – 2018
Instructor, Junior Scientist Workshop on Theoretical Neuroscience, Janelia Research Campus	2016
Postdoctoral Travel Award, City University of New York	2015
Fulbright Visiting Scholar Fellowship	2013
PhD Fellowship, Ministère de l'Enseignement Supérieur et de la Recherche, France	2007 – 2010
Travel Grant, Frontiers in Life Sciences PhD Program - Bettencourt Schueller Foundation	2008 – 2009
Travel Award, Organization for Computational Neurosciences - Brain Corporation	2007
Scholarship for Undergraduate Studies, Ecole Normale Supérieure Cachan	2002 – 2006

Advising

Zachary Saccomano (Graduate), City College of New York (with A. Amarasingham) <i>Dynamical System Models of Neuronal Synchrony</i>	2017
Martin Regnaud (Undergraduate), City College of New York (with A. Amarasingham) <i>Nonparametric Statistical Estimation of Neuronal Synchrony</i>	2017
Cong Jiang (Undergraduate), City College of New York (with A. Amarasingham) <i>Interval Jitter Fast Algorithms</i>	2016–2017
Talfan Evans (Graduate), New York University (with S. McKenzie) <i>Generalized Linear Model for Connectivity Inference</i>	2016
Paul Millington (Undergraduate), City College of New York (with A. Amarasingham) <i>Spike Data Analysis</i>	2016
Majdi Rabia (Undergraduate), City College of New York (with A. Amarasingham) <i>Neuron Model Parameters Inference from Spike Times</i>	2015
Rachana Balasubramaniam (High-School), New York University <i>Extracellular Spike Data Analysis</i>	2014

Teaching Experience

Adjunct Professor , Elements of Probability Theory, City College of New York <i>Based on A First Course in Probability, Sheldon Ross, Undergraduate-Level, 1 Semester</i>	2016
Adjunct Professor , Precalculus, City College of New York <i>Algebra and Trigonometry for Preparation to Calculus, Undergraduate-Level, 1 Semester</i>	2014
Teaching Assistant, Introduction to Robotics, Université Pierre et Marie Curie <i>Lab with an Educational Robot, Undergraduate-Level, 2 Semesters</i>	2011 – 2012
Teaching Assistant, Computational Neuroscience, Ecole Normale Supérieure <i>Neuroscience Project-Based Computer Lab, Undergraduate-Level, 2 Semesters</i>	2008 – 2009
Teaching Assistant, General Physics, Université Paris Diderot <i>Electromagnetism, Mechanics, Optics, Undergraduate-Level, 1 Semester</i>	2009
Teaching Assistant, Measurement in Mechanics, Conservatoire National des Arts et Métiers <i>Lab on Principle of Measurement, Continuing Education, 1 Semester</i>	2008
Teaching Assistant, Physics, Ecole Nationale de Chimie, Physique et Biologie <i>High School-Level, 1 Semester</i>	2003 – 2004
Volunteer Teacher, Mathematics, Tremplin Association <i>French Higher School Class Preparatory-Level</i>	2006 – 2009
Volunteer Teacher, General Science, La Plaine Association <i>Junior High School-Level</i>	2002 – 2004

Communications

Peer-Reviewed Conference Publications :

- [Platkiewicz J](#), Mansutti A, Bordegoni M, and Hayward V (2014). Recording Device for Natural Haptic Textures Felt with the Bare Fingertip, *Haptics : Neuroscience, Devices, Modeling, and Applications*. Springer Berlin Heidelberg, 521–528
- [Platkiewicz J](#) and Brette R (2011). Dynamics of Neuronal Excitability Threshold, *Résumés des exposés de la 14e Rencontre du Non Linéaire*, Paris 2011, 48

Conference Presentations :

- English DF, McKenzie S, Kim K, [Platkiewicz J](#), Yoon E, Buzsáki G (2016). Optogenetically Assisted Identification of Spike Transmission Between Pyramidal Neurons and Interneurons In Vivo. *Society for Neuroscience Meeting*, San Diego, USA
- [Platkiewicz J](#) and Amarasingham A (2016). Monosynaptic Connection Test Using Pairwise Extracellular Spike Data. *Sense To Synapse Annual Workshop*, The Rockefeller University, New York, USA
- [Platkiewicz J](#) and Amarasingham A (2015). Monosynaptic Connection Test Using Pairwise Extracellular Spike Data. *Statistical Methods for Understanding Neural Systems Workshop, NIPS Conference*, Montreal, Canada
- [Platkiewicz J](#), English DF, Stark E, Quilichini P, Buzsáki G, and Amarasingham A (2015). Calibration of Extracellular Spike Models of Monosynaptic Dynamics using Intracellular Recording, *Society for Neuroscience Meeting*, Chicago, USA
- [Platkiewicz J](#), Diba K, Quilichini P, Buzsáki G, and Amarasingham A (2015). Robust Estimation of Millisecond Timescale Synchrony under Nonstationary Conditions and its Physiological Interpretation, *Computational Neuroscience Meeting*, Prague, Czech Republic
- [Platkiewicz J](#), Lipson H, and Hayward V (2014). A Fingertip-like Haptic Feature Detector Based on the Universal Jamming Gripper, *Active Touch Sensing in Animals and Robots Workshop, IEEE/RSJ International Conference on Intelligent Robots and Systems*, Chicago, USA (talk)
- [Platkiewicz J](#), Michalska H, and Hayward V (2013). Ideal-Observer Models of Perceptual Contrast Enhancement, *Computational Neuroscience Meeting*, Paris, France
- [Platkiewicz J](#), Michalska H, and Hayward V (2013). Human Integration of Proportional Sensory Cues as Optimal Statistical Inference, *Symposium on Biology of Decision Making*, Brain & Spine Institute, Paris, France
- [Platkiewicz J](#), Michalska H, and Hayward V (2013). Simple Statistical Models of Contrast Enhancement, *Meeting of the European Commission Project The Hand Embodied*, Bielefeld, Germany
- [Platkiewicz J](#), Wong S C, Pijewski R, Fasiello I, and Hayward V (2012). The Size-Weight Illusion Generalized to the Size-Mass Illusion, *Society for Neuroscience Meeting*, New Orleans, USA
- [Platkiewicz J](#), Brette R, Goldin A L, and Brenner M P (2011). A Statistical Analysis of Voltage-Gated Sodium Channels Diversity, *Young Researchers in Life Sciences Conference*, Pasteur Institute, Paris, France
- [Platkiewicz J](#), Brette R, Goldin A L, and Brenner M P (2010). A Statistical Analysis of Voltage-Gated Sodium Channels Diversity, *Workshop CNRS-MPG in Systems Biology*, Henri Poincaré Institute, Paris, France
- [Platkiewicz J](#) and Brette R (2008). A Biophysical Model of the Threshold Dynamics, *Forum of European Neuroscience*, Geneva, Switzerland
- [Platkiewicz J](#) and Brette R (2008). A Biophysical Model of the Threshold Dynamics, *Workshop on Multiple Time Scales in the Dynamics of the Nervous System*, International Center for Theoretical Physics, Trieste, Italy
- [Platkiewicz J](#) and Brette R (2007). A Dynamical System Analysis of the Adaptive Spike Threshold. *Computational Neuroscience Meeting*, Toronto, Canada
- [Platkiewicz J](#) and Brette R (2007). Estimating an Adaptive Integrate-and-Fire Model from Unreliable Spikes. *Workshop on Quantitative Neuron Modeling*, Ecole Polytechnique Fédérale de Lausanne, Switzerland
- [Platkiewicz J](#) and Bourguin P (2005). Extending the Haken-Kelso-Bunz Model at the Collective Level : the Rhythmic Applause Phenomenon. *Rhythm Perception and Production Workshop*, Alden-Biesen, Belgium

Invited Talks :

- Spike-Based Connectomics : Inferring Microcircuit Connectivity from Spike Time Data. *Flatiron Institute, Simons Center*, New York, NY, January 2017
- How Mathematical Modeling Can Help Us Understand Haptic Illusions. *Oculus Research*, Redmond, WA, October 2016
- $1+1 = 3$: Deciphering the Nuts and Bolts of Neural Computation. *Neuroscience Program, Bates College*, Lewiston, ME, October 2016
- Haptic Edge Detection Through Shear. *ERC Computational Touch Workshop, Université Pierre et Marie Curie*, Paris, France, September 2016
- Inferring Microcircuit Connectivity Dynamics from Spike Data. *Institut de Neurobiologie de la Méditerranée*, Marseille, France, June 2016
- Inferring Microcircuit Connectivity Dynamics from Spike Data. *Theoretical Neuroscience Seminar, European Institute For Theoretical Neuroscience*, Paris, France, June 2016
- Can a Single Presynaptic Spike Make a Postsynaptic Cell Fire? *Biomedical Engineering Seminar, City College of New York*, New York, NY, March 2016
- A Needle in a Haystack : Inferring a Monosynaptic Dynamic from In Vivo Extracellular Recordings. *Mathematical Biology Seminar, New Jersey Institute of Technology*, Newark, NJ, September 2015
- Inferring the Dynamics of Monosynaptic Transmission from Extracellular Recordings. *Laboratory of Sensory Processing, Ecole Polytechnique Fédérale de Lausanne*, Lausanne, Switzerland, July 2015
- The Size-Weight Illusion Can Be Explained by a Subtractive Cue Combination Model. *Weight Illusions Workshop, IEEE Haptics*, Chicago, IL, June 2015
- Tactile Sensing from Strain Measurement. *Re Touch Lab, Drexel University*, Philadelphia, PA, May 2013
- Does Size Matter ? An Experimental and Theoretical Study on Visuo-Haptic Integration in Humans. *Group of Neural Theory, Ecole Normale Supérieure*, Paris, France, October 2012
- A Computational Approach to the Problem of Voltage-Gated Sodium Channel Diversity. *Centre de Recherche en Neurobiologie et Neurophysiologie de Marseille, Aix-Marseille Université*, May 2011
- Sodium Channel Inactivation : an Efficient Mechanism for Temporal Coding? *Adaptive NeuroComputation group, Université Pierre et Marie Curie*, Paris, France, November 2010
- Spike Threshold Variability and Dynamics in Hodgkin-Huxley Models. *The Swartz Foundation, Yale University*, New Haven, CT, December 2010
- Action Potential Initiation : a Complex Dynamical Process. *European Conference on Complex Systems*, Lisbon, Portugal, September 2010
- Dynamics of Neuronal Excitability. *Complex Systems Institute Seminars*, Paris, France, July 2010
- Models of Cell Excitability with Hardly Any Equation. *Center for Research and Interdisciplinarity*, Paris, France, March 2009
- Are Models of Cell Excitability Relevant to the Study of Perception. *Laboratory Psychology of Perception, Université Paris Descartes*, Paris, France, March 2009
- Le Seuil Adaptatif : un Mécanisme de Sélection de l'Activité Synchronne. *Centre de Rencontres Mathématiques*, Marseille, France, June 2007

Professional Activity & Memberships

Co-Organizer, Theoretical Neuroscience Chalk Talks with William Bialek at the Graduate Center of the City University of New York	2015 – present
Co-Organizer, Early Touch Workshop with Vincent Hayward at the Computational Neuroscience Meeting, Paris	2013
Ad Hoc Reviewer, Scientific Reports, Journal of Neurophysiology, Neurocomputing, PLOS ONE, Europhysics Letters, Australasian Physical and Engineering Sciences in Medicine, IEEE World Haptics Conference	2009 – 2017
Member, Society for Neuroscience, International Brain Research Organization, Institute of Electrical and Electronics Engineers, French Neuroscience Society	2007 – 2016
Participant, Theoretical Neuroscience Summer School (Advisor : Christoph von der Malsburg), Frankfurt Institute for Advanced Studies	2008

Outreach Activities

Radio Producer, “Recherche en Cours” (program on science and society), Aligre FM <i>Produced Segments and Interviews on Scientific Subjects</i>	2010 – 2013
Co-organizer, Workshop “Hands-on Haptics”, La Gaité Lyrique, Paris, France <i>Demonstrations of Haptic Displays and Illusions</i>	2012
Lecturer, Basics of Haptics, Ecole Supérieure des Arts Décoratifs, Strasbourg, France <i>Tutorial on Haptics to Artist Students</i>	2012
Expert Scientist, French Cognitive Science Information Resource Center (RISC) <i>Referenced, Developed and Organized the Video Library</i>	2006