

BEATRIZ HERRERA

Department of Biomedical Engineering, Florida International University

bherr035@fiu.edu

EDUCATION

Florida International University

Doctor of Philosophy in Biomedical Engineering, CGPA: 3.89/4
Graduate Research Student of Neuronal Mass Dynamics Laboratory

August 2018 onwards

University of Havana

Bachelor of Science in Physics, CGPA: 4.67/5
Dissertation title: *"Braess's Paradox in Spiking Neuronal Networks"*

Sept. 2013 - July 2018

LANGUAGES

Spanish – native

English – Fluent/Proficient

TECHNICAL SKILLS

- Proficient: MATLAB, Python, C/C++, Microsoft Office, Latex
- Experienced: Brian2, Brainstorm, EEGLAB, WaveClus, Wolfram Mathematica, Origin, R. Unix/Linux and Windows operating system.

PROFESSIONAL AFFILIATIONS

- Society for Neuroscience

RESEARCH AND WORK EXPERIENCE

Graduate Research Assistant, Department of Biomedical Engineering, FIU, Miami, FL.

Aug 2018-Present

Advisors: Dr. Jorge Riera Diaz and Dr. Jeffrey D. Schall (Department of Psychology, Vanderbilt University)

Topics:

Microcircuitry of agranular frontal cortex:

- Develop a simplified compartmental model of neocortical pyramidal cell capable of reproducing the main features of these neurons.
- Study patterns of laminar connectivity in SEF of macaque monkeys performing saccade countermanding (stop-signal) task.
- Understand the circuit accomplishment performance monitoring and executive control.

Graduate Teaching Assistant, Department of Biomedical Engineering, FIU, Miami, FL.

Aug 2019 – Dec 2019

Courses:

BME 4422/IDH 3034 (U38): The Biophysics of Neural Computation - Theory

Instructor: Dr. Jorge Riera Diaz

Undergraduate Research Assistant, Faculty of Physics, University of Havana and the Cuban Neurosciences Center (CNEURO), La Habana, Cuba

Sep 2014 – Jul 2018

Project: “Statistical Physics’ tools for inference of brain connectivity and activity from neuroimages data”.

Project leader: Dr. Alejandro Lage Castellanos (Investigation deputy dean, Faculty of Physics, University of Havana).

Advisors: Dr. Roberto Mulet and Dr. Eduardo Martinez

- Developed a C code in order to simulate an active neuron and predict its response to different current stimulations.
- Performed simulations of spiking neural networks using Brian 2 to study the presence of an analogous of the Braess’ Paradox on these networks.
- Performed statistical analysis on data sets using Python.

Undergraduate Teaching Assistant, Laboratory instructor,

Sep 2014 – July 2017

Department of General Physics, Faculty of Physics, University of Havana, La Habana, Cuba.

Courses:

- Classical Mechanics Laboratory. Sep 2014/15 – Jan 2015/16
- Molecular Physics Laboratory. Feb 2015/16 – July 2015/16
- Electromagnetism Laboratory. Sep 2016 – Jan 2017

Department of Theoretical Physics, Faculty of Physics, University of Havana, La Habana, Cuba.

Course:

- Statistics and Probability. Professor: Dr. Roberto Mulet. Feb 2017 – Jul 2017

POSTER PRESENTATIONS

- **October 19-23, 2019. Society for Neuroscience 49th Annual Meeting, Chicago, Illinois, United States.**
B. Herrera, A. Sajad, G. F. Woodman, J. D. Schall, J. J. Riera.
“Microcircuitry of agranular frontal cortex: A stochastic 2-compartment model of neocortical pyramidal cells”.
- **April 4-5, 2019. Third Annual Neural Engineering Symposium, Institute for Neural Engineering, University of Miami, Miami, Florida.**
Herrera B., Moshkforoush A. and Riera J.
“A stochastic 2-compartment model of neocortical pyramidal cells”.
- **Marsh 28-29, 2017. The XIV Symposium and XII Congress of the Cuban Physics Society, School of Physics, University of Havana, La Habana, Cuba.**
Herrera B and Mulet R.
“Braess’s Paradox in a Network of Hodgkin-Huxley Neurons”.

ORAL PRESENTATIONS

- **May, 2018. The XXXIV Student Scientific Conference, Faculty of Physics, University of Havana, La Habana, Cuba.**
Herrera B.
"Braess's Paradox in a Network of Spiking Neurons".
- **April 12, 2018. The Student Scientific Forum of University of Havana, La Habana, Cuba.**
Herrera B.
"Braess's Paradox in a Network of Hodgkin-Huxley Neurons".
- **May, 2017. The XXXIII Student Scientific Conference, Faculty of Physics, University of Havana, La Habana, Cuba.**
Herrera B.
"Braess's Paradox in a Network of Hodgkin-Huxley Neurons".
- **May, 2016. The XXXII Student Scientific Conference, Faculty of Physics, University of Havana, La Habana, Cuba.**
Herrera B.
"Braess's Paradox in a Network of Hodgkin-Huxley Neurons".
- **May, 2015. The XXXI Student Scientific Conference, Faculty of Physics, University of Havana, La Habana, Cuba.**
Herrera B.
"The Hodgkin-Huxley Model: developing fluctuations".

AWARDS AND HONORS

- Won 2nd place at the XXXIII Student Scientific Conference, Biophysics and Complex Systems Commission, oral presentation. University of Havana, La Habana, Cuba, 2017.
- Won 1st mention at the XXXI Student Scientific Conference, Biophysics and Complex Systems Commission, oral presentation. University of Havana, La Habana, Cuba, 2015.