Mauro M. Monsalve M.

Physicist/Neuroscientist, Ph.D.

▬▬▬ Professional Preparation

Dec 2018 – Today	**Postdoctoral research scientist**, *Research in theoretical neuroscience*, Center for Theoretical Neuroscience, Columbia University, New York, USA.
August 2018 – Oct 2018	**Research fellow**, *Research in theoretical neuroscience*, Kavli Institute for Systems Neuroscience, Center for Neural Computation, Trondheim, Norway.
2017 – Today	**Doctoral studies in Theoretical Physics**, *TUM Graduate School*, Chair of theoretical biophysics and neural information processing, Physics Department, Technische Universität München, Munich, Germany.
Advisor	Prof. Dr. Leo van Hemmen
2014 – 2018	**Doctor of Philosophy degree (Ph.D.) in Computational Neuroscience**, *Graduate School of Systemic Neurosciences and Bernstein Center for Computational Neuroscience*, Ludwig-Maximilians-Universität München, Munich, Germany.
Advisors	Prof. Dr. Christian Leibold, Prof. Dr. Andreas Herz
Thesis	*Space in the brain: Of learning and representations*
July 2014 – Sept. 2014	**Research fellow**, *Research in high energy physics and mathematical physics*, Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, Italy.
2011 – 2014	**Master of Science (M.Sc.) degree in Theoretical Physics**, *Elite Master Course Theoretical and Mathematical Physics*, Ludwig-Maximilians-Universität München and Max-Planck-Institut für Physik (Werner-Heisenberg-Institut), Germany.
Thesis	*Geometric Constructions on $AdS_5 \otimes M_5$ Type IIB Supergravity Backgrounds and Implications for their Field Theory Duals*
Sept. 2009 – Feb. 2010	**Research assistant**, *High resolution simulations of deformations on spheroidal dwarf galaxies*, Astrophysics Research Group, Physics Department, National University of Colombia.
2006 – 2010	**Undergraduate studies in physics**, *Physics Department, National University of Colombia*, Bogotá,Colombia, Bachelor's degree plus additional coursework (Diplom).

▬▬▬ Teaching Assistant

WS 2017/18	Statistische Mechanik und Thermodynamik, *Fakultät für Physik, TUM München*, Germany.
WS 2015/16	Introduction to Python, *GSN Graduate School, LMU München*, Germany.
SS 2014	Mathematical Statistical Physics, *Mathematisches Institut, LMU München*, Germany.
WS 2013/14	Analysis 1 für Informatiker und Statistiker, *Mathematisches Institut, LMU München*.
WS 2012/13	Thermodynamik und statistische Physik, *Fakultät für Physik, LMU München*, Germany.

Journal Publications

2020   Monsalve-Mercado* and Leibold, *The effect of boundaries on grid cell patterns, Physical Review Research, in Press*

2019   Monsalve-Mercado* and Roudi, *Hippocampal spike-time correlations and place field overlaps during open field foraging, Hippocampus Special Issue: Computational models of hippocampus and related structures. 2020; 30: 354– 366.*

2017   Monsalve-Mercado* and Leibold, *Hippocampal spike-timing correlations lead to hexagonal grid fields, Physical Review Letters 119, 038101*

2017   Leibold and Monsalve-Mercado, *Traveling Theta Waves and the Hippocampal Phase Code, Scientific Reports 7, Article number: 7678*

2016   Leibold and Monsalve-Mercado, *Asymmetry of Neuronal Combinatorial Codes Arises from Minimizing Synaptic Weight Change, Neural Computation 28: 1527-1552*

   *   *Corresponding author*

Meetings and Presentations

June 2018   **International Conference on Mathematical Neuroscience**, *Speaker: Grid cells: Oscillations and boundaries*, Antibes - Juan les Pin, France.

June 2017   **Spring Hippocampal Research Conference**, Taormina,Italy.

June 2017   **International Conference on Mathematical Neuroscience**, *Speaker: Feed-forward learning of grid cells: Universality and biological implementations*, Boulder,Colorado,USA.

July 2016   **RIKEN Summer Program**, *Staking, Making and Breaking Circuits*, RIKEN, Tokyo,Japan.

September 2015   **13th Summer Course on Computational Neuroscience**, *Theoretical perspectives on neural assemblies*, BCCN Göttingen, Göttingen, Germany.

March 2015   **Computational and Systems Neuroscience (COSYNE) Conference and Workshop**, *University of Rochester*, Salt Lake City, USA.

March 2014   **Workshop on Computational Methods in Biophysics**, *Fakultät für Physik*, Ludwig-Maximilians-Universität München, Germany.

September 2013   **Workshop on Geometric Correspondences of Gauge Theories**, *The Abdus Salam International Centre for Theoretical Physics*, Trieste, Italy.

Awards and Scholarships

2011 – 2013   **DAAD Scholarship**, *Deutscher Akademischer Austausch Dienst (German Academic Exchange Service).*

2011 – 2013   **COLFUTURO Scholarship**, *COLFUTURO*, Student scholarship.

Languages

Spanish   Mother Tongue

English   Advanced

German   Intermediate   *Level CEFR* **B2**