

# Gautam Reddy N.

## Curriculum vitae

Department of Physics  
University of California, San Diego  
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### Interests

My interests lie at the intersection of physics, biology and computer science. I'm broadly interested in quantitative biology with a focus on theoretical neuroscience and machine learning. My current work involves the thermal soaring of birds, the olfactory navigation of mice and insects, and the peripheral neurobiology of the olfactory system.

### Education

From 2013 **Ph.D in Physics**, *University of California, San Diego*, GPA: 3.95/4.0.

Advisor: Prof. Massimo Vergassola

2009–2013 **B.Tech in Engineering Physics with Honours**, *Indian Institute of Technology, Bombay*, Mumbai, GPA: 9.25/10.

B.Tech Thesis advisor: Prof. S. Umasankar

### Publications

**G. Reddy\***, J. Wong Ng\*, A. Celani, T. J. Sejnowski & M. Vergassola, Soaring through reinforcement learning in the field, *Nature*, in press, 2018.

**G. Reddy\***, J. Zak\*, M. Vergassola & V. Murthy, Antagonism in olfactory receptor neurons and its implications for the perception of odor mixtures, *eLife*, 7:e34958, 2018.

**G. Reddy**, A. Celani, T. J. Sejnowski & M. Vergassola, Learning to soar in turbulent environments, *Proc. Natl. Acad. Sci.*, 113-33:4877-4884, 2016.

**G. Reddy**, A. Celani & M. Vergassola, Infomax strategies for an optimal balance between exploration and exploitation, *J. Stat. Phys.*, 163:1454-1476, 2016.

### Workshops and programs

July - **KITP Graduate Fellowship Program**, *Kavli Institute for Theoretical Physics*,  
December Santa Barbara, CA.  
2018

August 2018 **Neurophysics of Sensory Navigation**, *Kavli Institute for Theoretical Physics*,  
Santa Barbara, CA.

July 2017 **Cargèse Summer School in Theoretical Biophysics**, *Institut des études scientifiques de Cargèse*, Cargèse, Corsica, France.

## Talks

- [Contributed] **APS March Meeting 2018**, *American Physical Society*, Los Angeles, California, USA, March, 2018.  
Title: Antagonism in olfactory receptor neurons and implications for the perception of odor mixtures
- [Contributed] **Neurodinner**, *Neuroscience Division, UC San Diego*, La Jolla, California, USA, January, 2018.  
Title: Learning to soar in turbulent environments
- [Contributed] **Southern California Fluids Symposium XI**, *University of California, San Diego*, La Jolla, California, USA, April, 2017.  
Title: Learning to soar in turbulent environments
- [Poster] **Simons Meeting for Theory in Biology**, *Simons Foundation*, New York City, New York, USA, April, 2017.  
Title: Learning to soar in turbulent environments
- [Contributed] **APS March Meeting 2017**, *American Physical Society*, New Orleans, Louisiana, USA, March, 2017.  
Title: Learning to soar in turbulent environments
- [Contributed] **XXXIII Congress of OSTIV**, *Organisation Scientifique et Technique Internationale du Vol à Voile*, Benalla, Victoria, Australia, January, 2017.  
Title: Learning to soar in turbulent environments
- [Invited] **Inference Through the Lens of Physics Symposium**, *ITS, Graduate Center of CUNY*, New York City, New York, USA, November, 2016.  
Title: Sensing and navigation in uncertain environments
- [Invited] **Theoretical Condensed Matter Group**, *Boston University*, Boston, Massachusetts, USA, July, 2016.  
Title: Learning to soar in turbulent environments
- [Invited] **Computational Neuroscience Lab**, *Salk Institute of Biological Studies*, La Jolla, California, USA, May, 2016.  
Title: Learning to soar in turbulent environments
- [Invited] **Computational Cognitive Science Group**, *University of California, San Diego*, La Jolla, California, USA, May, 2016.  
Title: Infomax strategies for an optimal balance between exploration and exploitation
- [Contributed, Poster] **Physics Informed Machine Learning**, *Los Alamos National Laboratory*, Santa Fe, New Mexico, USA, January, 2015.  
Title: Learning to soar in turbulent environments

## Teaching Experience

Graduate Teaching Assistant at UCSD for:

- o Electricity and Magnetism Lab, PHYS 1BL, Fall 2013
- o Fluids, Waves and Heat, PHYS 4B, Spring 2014
- o Mathematical Methods in Physics, PHYS 201, Fall 2015, 2016, 2017.