# Rami M. Amro

Born: Jan, 1985 Beit Mersem, Hebron, Palestine Nationality: Palestinian

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### **Current and Previous Position**

2016-presentAssistant professor at Palestine Technical University – Kadoorie, Tulkarm/Palestine.2015-2016Post-doctoral Research Scholar at University of California Los Angeles (UCLA).

#### Areas of specialization

Physics • Biological physics of sensory hair cells

#### Education

2010–2015 Ph.D. in Physics, Ohio University, OH, USA Dissertation title: "Nonlinear Stochastic Dynamics and Signal Amplifications in Sensory Hair Cells". Ph.D. Advisor Alexander. B. Neiman
2008–2010 MSc in Physics, University of Louisville, KY, USA.

#### 2003–2007 BSc in Physics/ Mathematcs, Birzeit University ; Palestine (*with honors*)

### **Research Interests**

In general, I am interested in the physics of biological systems. Currently, my research is concerned with biophysics of peripheral sensory receptors in the inner ear, inner hair cells. I use computational and theoretical methods of statistical physics, stochastic processes and nonlinear dynamics to model and investigate spontaneous and response dynamics of sensory hair cells (SHCs) including mechanisms of their high sensitivity, selectivity and nonlinear amplification.

#### Computational skills

• C++, Fortran90 (including GPU computing), Matlab, Mathematica, Maple, NEURON, Bash scripting.

• Operating systems: Linux, Mac OS, and Windows.

• Advanced numerical methods of nonlinear dynamics, including parameter continuation techniques, time-series analysis, and stochastic dynamics.

#### Languages

Arabic – Mother tongue. English – fluent.

#### **Publications**

Journal Articles

2016 A. B. Neiman, and **R. M. Amro**. Mechanical and electrical oscillations and their role in sensory hair cells. *Opera Medica et Physiologica* S1 (2016).

- 2015 **R. M. Amro**, B. Lindner, A. B. Neiman. Phase Diffusion in Unequally Noisy Coupled Oscillators. *Phys. Rev. Lett.* 115.3 (2015): 034101.
- **R. M. Amro**, A. B. Neiman. Effect of bidirectional mechanoelectrical coupling on spontaneous oscillations and sensitivity in a model of hair cells, *Phys. Rev. E* 90, 052704.
- 2014 **R. M. Amro** and A. B. Neiman, in International Conference on Theory and Application in Nonlinear Dynamics, Seattle, 2012, edited by V. In, A. Palacios, P. Longhini, Springer, p.237.

#### In progress

- 2017 R. M. Amro. Effect of membrane potential on the mechanical flick in sensory hair cells. *In progress*.
- 2017 **R. M. Amro**. Sensitivity of hair bundle oscillations to membrane potential variations. *In progress*.
- 2017 R. M. Amro. Response of two asymmetrically coupled nonlinear stochastic oscillators. *In progress*.

#### Conferences and Talks

- 2016 R. M. Amro, D Bozovic, and A. B. Neiman. "Spontaneous and response dynamics of sensory hair cells", Biophysical society 60 annual Meeting, Los Angeles, CA, USA.
- 2014 "Nonlinear Stochastic Dynamics of Sensory Hair Cells". SIAM Conference on life sciences, Charlotte, NC, USA.
- 2014 R. M. Amro, A. B. Neiman. "The Role of Bidirectional Coupling in the Bullfrog's Saccular Hair Cells (Newer version)". CMSS and NQPI poster session, Ohio University, Athens, OH, USA.
- 2013 R. M. Amro, A. B. Neiman. "The Role of Bidirectional Coupling in the Bullfrog's Saccular Hair Cells". APS meeting 2013/Ohio section.
- 2013 From Quarks to Superclusters: Physics of the very big and the very small, Ohio–Region Section of the APS (OSAPS), Athens, OH, USA.
- 2013 Mathematical Biosciences Institute. Workshop 6: Sensory Systems and Coding, May 6-10, 2013, Columbus, OH,USA.
- 2013 APS March meeting 2013, Baltimore, MD, USA. "Interaction of mechanical and electrical oscillations and sensitivity in a model of sensory hair cell".
- 2012 Mathematical Biosciences Institute. Workshop 1: Mathematical Challenges in Neural Network Dynamics, October 1-5, 2012, Columbus, OH,USA.
- 2010 Dynamics Days (Jan 2010), Northwestern University, Chicago, USA.
- 2008 Physics conference at Al-Quds University, Palestine.

#### Scholarships, honors and awards

2010-2015 Recognized by honors society for academic achievements.
2014 Second place award for the CMSS poster session.
2013 Condensed Matter and Surface sciences (CMSS) studentship award for the academic year 2013.
2013 First place award for outstanding presentation at Student Research and Creative Activity Expo. Ohio University.
2011 Outstanding Teaching Assistant award, 2011, Ohio University.
2003–2007 The dean of science scholarship for undergraduate studies in physics at Birzeit University.

### **Teaching Experience**

2010-2015

- 2016-2017 Professor at Palestine Technical University, TulKarm, Plaestine:
  - Introductory physics labs.
  - Mathematical Physics.
  - General physics I & II.
  - Modern physics.

Graduate teaching assistant (GTA) at Ohio University, OH, USA:

- Introductory physics labs for scientists, engineers, and pre-med students.
- Grading graduate level courses: classical mechanics, physics of nanostructures and other undergraduate assignments.
- Help sessions and one to one tutoring to students in introductory physics for scientist and engineers.

2008–2010 GTA at University of Louisville; KY, USA:

- Introductory physics labs,
- Advanced optics lab.
- Modern physics labs.
- Help sessions

2007–2008

- GTA at Al-Quds university/Dept. of Physics:
  - Introductory physics labs.
  - Modern physics labs.

## Extracurricular activities and Memberships

2015-present	Member of the American Biophysical society (BPS).
2010-present	Member of the American Physical Society (APS).
2009–2010	Graduate Teaching Academy, a volunteer, University of Louisville, KY, USA.
2005–2007	Tutoring lessons on the fundamentals of Physics to undergraduate students at Birzeit University,
	Palestine.
2007–2008	Team work developing curriculum material for high school, Al_Quds University, Palestine.

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