

Curriculum Vitae: Michael Assaf

Family name : Assaf
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Citizenship : Israeli
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Academic Positions:

2020 – present: Associate Professor at the Racah Institute of Physics, at the Hebrew University.

2013 – 2020: Senior Lecturer at the Racah Institute of Physics, at the Hebrew University.

2012 – 2013: Research associate at the Racah Institute of Physics, at the Hebrew University.

2010 – 2012: Postdoctoral fellow at the ICMT, University of Illinois at Urbana-Champaign.
Advisor: Prof. Nigel Goldenfeld

2002 – 2009: Teaching assistant at the Racah Institute of Physics, at the Hebrew University.
Advisor: Prof. Baruch Meerson.

Academic Studies:

- **2010** Ph.D. in physics
Racah Institute of Physics, Hebrew University of Jerusalem, Israel
Dissertation: "Theory of large fluctuations in stochastic populations".
Graduated *summa cum laude*. **Advisor:** Prof. Baruch Meerson
- **2004** M.Sc. in Physics
Racah Institute of Physics, Hebrew University of Jerusalem, Israel
Dissertation: "Autoresonance in Faraday waves". Graduated with high honors (average: 95.3).
Advisor: Prof. Baruch Meerson
- **2001** B. Sc. in Physics and Computer Science
Hebrew University of Jerusalem, Israel
Graduated with high honors (average: 95.1).
- **2001** M. Mus. in Cello performance
Jerusalem Academy of Music and Dance, Israel
Advisor: Prof. Shmuel Magen (Graduated with honors).
- **1999** B. Mus. in Cello performance
Jerusalem Academy of Music and Dance, Israel
Advisor: Prof. Shmuel Magen (Graduated with honors).

Active and Past Grants:

- 2014-2019: ISF (Israel Science Foundation) grant, “*Effects of extrinsic noise on biochemical networks and cellular decision making*”. Total budget: 220,000\$.
- 2018-2023: NSF-BSF (US – Israel Binational Science Foundation) grant, “*A Statistical physics approach to the control and evolution of cellular networks*”. Total budget: 268,000\$.
- 2020-2024: ISF (Israel Science Foundation) grant, “*Large deviations in population networks: the role of network heterogeneity*”. Total budget: 250,000\$.

Research Interests:

1. Non-equilibrium statistical mechanics.
2. Large deviation theory.
3. Statistical physics on heterogeneous networks.
4. Stochastic dynamics of gene regulation.
5. Evolutionary game theory.
6. Cellular decision making under demographic and environmental noise.
7. Mathematical models of microbial evolution.

Prizes, awards and fellowships:

- *Alexander von Humboldt* research fellowship for experienced researchers – in 2020-2021
- *Center for the physics of living cells* postdoctoral fellowship, University of Illinois – in 2010-2012
- *Aharon Katzir* prize for excellent Ph.D. thesis – in 2011
- *Rothschild* post-doctoral fellowship – in 2010-2011
- *Fulbright* post-doctoral fellowship – in 2010-2011
- *Wolf* Prize for excellence for Ph.D. students – in 2008
- *Charles Clore* Prize and scholarship for Ph.D. students – in 2007-2009
- Faculty day Poster Prize - in 2007
- *Racah* award for excellence in research - in 2006
- *Perlmann* award for excellence – in 2004
- *Racah institute of Physics* M.Sc. scholarship - in 2002-2004
- Dean’s list and prize scholarships – in 1999-2000 and 2000-2001

Recent Students:

1. Shay Be’er – Ph.D. student (2014-2018). Graduated May 2018.
2. Stav Marcus – Research student (2015-2016).
3. Carmel Sagi – M.Sc. student (2016-2018). Graduated June 2018.
4. Daniel Sabsovich – Research student (2014-2017).
5. Tom Israeli – M.Sc. student (2017-2019). Graduated August 2019.
6. Ami Taitelbaum – M.Sc. student (2018-2019). Graduated August 2019.
7. Raphael Mamane – M.Sc. student (2017-2020). Graduated July 2020.
8. Ohad Vilk – M.Sc. + Ph.D. student (2017-)
9. Elad Korngut – Ph.D. student (2020-)

Selected invited talks:

1. Invited talk at the [BIRS Workshop on Advances in Theoretical and Experimental Methods for Analyzing Complex Regulatory Networks](#), Banff, Canada, September 2020. Title: *Reconstructing an epigenetic landscape using a genetic 'pulling' approach.*
2. Invited talk at the [SIAM conference on Applications of Dynamical Systems 2019](#), Snowbird, UT, May 2019. Title: *Rare events in population dynamics: going beyond the well-mixed setting.*
3. Invited talk at the [APS March Meeting 2018](#), Los Angeles, CA, March 2018. Title: *Noise-Induced Rare Events in Population Dynamics: Role of Spatial Heterogeneity.*
4. Invited talk at the [SIAM conference on Applications of Dynamical Systems 2017](#), Snowbird, UT, May 2017. Title: *Noise-Induced Rare Events in Population Dynamics: Role of Spatial Degrees of Freedom.*
5. Invited talk at the [62nd IPS Meeting 2016](#), Tel-Aviv University, December 2016. Title: *Revisiting the genetic toggle switch in the absence of cooperative binding.*
6. Invited talk at the [APS March Meeting 2016](#), Baltimore, MD, March 2016. Title: *The effect of extrinsic noise on the dynamics of simple gene network motifs.*
7. Invited talk at the [SIAM conference on Applications of Dynamical Systems 2015](#), Snowbird, UT, May 2015. Title: *The Effect of Extrinsic Noise on Gene Regulation.*
8. Invited talk at the [Lorentz Center conference on Fluctuations in Population Biology: Epidemiology and Evolution](#), Leiden, the Netherlands, August 2014. Title: *The effects of extrinsic noise on cellular decision making.*
9. Invited talk at the [Heraeus Seminar on the Versatile Action of Noise: Applications from Genetic to Neural Circuits](#), Bremen, Germany, June 2014. Title: *Theoretical analysis of large deviations in stochastic population dynamics.*
10. Invited talk at the [BIRS Workshop on Stochasticity in Biochemical Reaction Networks](#), Banff, Canada, September 2013. Title: *Extrinsic noise driven phenotype switching in a self-regulating gene.*
11. Invited talk at the [Q-Bio Seminar at the Center for nonlinear studies](#), Los Alamos National Lab, NM, January 2012. Title: *Determining the stability of genetic switches: Explicitly accounting for mRNA noise.*
12. Invited talk at the [ICMT conference on Large Fluctuations and Collective Phenomena in Disordered Materials](#), University of Illinois at Urbana-Champaign, IL, October 2011. Title: *Rare fluctuations and large-scale circulation cessations in turbulent convection.*
13. Invited talk at the [Harvard System's Biology seminar](#), Harvard University, MA, April 2011. Title: *Determining the stability of genetic switches: Explicitly accounting for mRNA noise.*
14. Invited talk at the [Princeton Biophysics seminar](#), Princeton University, NJ, April 2010. Title: *Extinction of metastable stochastic populations – beyond instanton calculations.*
15. Invited talk at the [SIAM conference on Applications of Dynamical Systems 2009](#), Snowbird, UT, May 2009. Title: *Extinction of metastable stochastic populations.*
16. Invited talk at the [52nd IPS Meeting 2006](#), Hebrew University, December 2006. Title: *Spectral theory of large fluctuations in reaction kinetics.*