



YOHAI BAR-SINAI

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EDUCATION

PERIOD	September 2016 — present	
INSTITUTE	Harvard University	Cambridge, Massachusetts, USA

Post doctoral fellow

Post doctoral fellow in the School of Engineering and Applied Sciences (SEAS) and a recipient of the [James S. McDonnell Post-doctoral fellowship](#) for the study of complex systems.

PERIOD	October 2015 — August 2016	
INSTITUTE	Weizmann Institute of Science	Rehovot, Israel

Post doctoral fellow

Post doctoral fellow in the Chemical Physics department, in Dr. Eran Bouchbinder's group. I worked on various projects related to nonlinear systems and statistical physics, including: stability of frictional motion, thermal fluctuations in inhomogeneous systems, dynamical and structural properties of glassy/amorphous systems.

PERIOD	December 2010 — September 2015	
INSTITUTE	Weizmann Institute of Science	Rehovot, Israel

PhD Student

PhD Student in the Chemical Physics department, under the supervision of Dr. Eran Bouchbinder. Worked on continuum theory of strongly out-of-equilibrium nonlinear systems. The main focus was frictional interfaces, but I also worked on the fluctuations of disordered systems, with possible implications to biophysics, in the context of severing of biopolymers.

PERIOD	August 2009 — August 2010	
INSTITUTE	École Normale Supérieure	Paris, France

Master student

Master Student at the Statistical Physics Laboratory, École Normale Supérieure de Paris, and in the University of Piere and Mary Curie (Paris 6). Under the supervision of Dr. Arezki Boudaoud and Dr. Mokhtar Adda-Bedia. Worked on modeling of plant growth.

THESIS "The role of elastic forces in shaping leaf venation networks".

PERIOD	2007 — 2009	
INSTITUTE	The Hebrew University in Jerusalem	Jerusalem, Israel

Undergraduate research assistant

Undergraduate research assistant in the group of Prof. Eran Sharon, Racah Institute of Physics.

PERIOD **2005 — 2008**

INSTITUTE **The Hebrew University in Jerusalem**

Jerusalem, Israel

Bachelor's Degree

BSc. in physics and mathematics, with honors.

Amirim program for outstanding science students.

ACADEMIC HONORS

2016 Dov Elad Memorial Prize for academic excellence.

2015 [James S. McDonnell Post-doctoral fellowship](#) for the study of complex systems.

2014 Best student talk award, Israeli Structural Integrity Group

2010 PhD fellowship, Pierre Gille de Gennes Foundation (declined).

2009 Federman Scholarship.

2007–2008 Amirim program for outstanding science students.

2006–2008 Dean's List of Distinguished Students.

2000 Participant in the International Physics Olympiad, in England.

TEACHING EXPERIENCE


2012–2016 Teaching assistant, Weizmann Institute of Science.

I was the teaching assistant in the course “Non-Equilibrium Continuum Physics”, and had a significant part in developing the curriculum. It covered fundamental continuum theory from a statistical thermodynamics perspective, linear and finite elasticity, visco-elasticity, plasticity, dislocations and fracture.

The course website is available [at this link](#).

2011 High school physics teacher, Boyer High School, Jerusalem.

2008–2009 Teaching assistant, The Hebrew University in Jerusalem.

- 2017** **Local thermal energy as a structural indicator in glasses**
Jacques Zylberg, Edan Lerner, Yohai Bar-Sinai and Eran Bouchbinder
PNAS **114**, 7289 (2017)
[arXiv:1703.09014](#).
- Gaussian fluctuations of spatially inhomogeneous polymers**
Yohai Bar-Sinai and Eran Bouchbinder
Soft Matter **13**, 995 (2017)
[arXiv:1601.01425](#).
- 2016** **Frictional Sliding without Geometrical Reflection Symmetry**
M. Aldam, Y. Bar-Sinai (equal contribution), I. Svetlizky, E. A. Brener, J. Fineberg, E. Bouchbinder
Physical Review X **6**, 041023 (2016)
[arXiv:1605.05378](#).
- Mechanical stress induces remodeling of vascular networks in growing leaves**
Y. Bar-Sinai, E. Sharon, S. Armon, N. Nakayama, M. Adda-Bedia, A. Boudaoud
PLOS Computational Biology **12** (2016)
- Dynamic instabilities of frictional sliding at a bimaterial interface**
E. Brener, M. Weikampf, R. Spatschek, Y. Bar-Sinai, E. Bouchbinder
Journal of the Mechanics and Physics of Solids **89**, 149-173 (2016).
[arXiv:1507.00156](#)
- 2015** **On the spatial distribution of thermal energy in equilibrium**
Y. Bar-Sinai, E. Bouchbinder
Physical Review E (Rapid Communications) **95**, 060103(R) (2015)
 Selected as Editors' Suggestion
[arXiv:1503.02325](#)
- Velocity-strengthening friction significantly affects interfacial dynamics, strength and dissipation**
Y. Bar-Sinai, R. Spatschek, E. Brener, E. Bouchbinder
Scientific Reports **5**, 7841 (2015)
[arXiv:1407.4253](#).
- 2014** **On the velocity-strengthening behavior of dry friction**
Y. Bar-Sinai, R. Spatschek, E. Brener, E. Bouchbinder
Journal of Geophysical Research: Solid Earth **119**, 1738 (2014)
[arXiv:1308.1420](#)
- 2013** **Instabilities at frictional interfaces: Creep Patches, Nucleation and Rupture Fronts**
Y. Bar-Sinai, R. Spatschek, E. Brener, E. Bouchbinder
Physical Review E (Rapid Communications) **88**, 060403(R) (2013)
[arXiv:1306.3658](#)
- 2012** **Slow rupture of frictional interfaces**
Y. Bar-Sinai, E. Brener, E. Bouchbinder
Geophysical Review Letters **39**, L03308 (2012)
[arXiv:1605.05378](#).