

124th Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, Room 114
Sunday, May 7, 2023 - Tuesday May 9, 2023

Honorees

Bill Bialek, Antti Kupianinen and Jorge Kurchan

Sunday, May 7, 2023

Registration and Breakfast 8:00 - 9:00

- 9:00 - 9:25 **Ilya Nemenman** - Emory University
Animal learning, a century after Pavlov
- 9:25 - 9:50 **Gregory Eyink** - John Hopkins University
Statistical Physics and Fluid Turbulence in Collision: Spontaneous Stochasticity
- 9:50 - 10:15 **Leticia Cugliandolo** - LPTHE Sorbonne Université
Dynamics of Motility-Induced clusters: coarsening beyond Ostwald ripening
- 10:15 - 10:40 **Ned Wingreen** - Princeton University
Exclusion of unwanted components from biomolecular condensates
- 10:40 - 11:10 **Coffee Break**
- 11:10 - 11:35 **Dov Levine** - Technion
Can we Define Random Close Packing?
- 11:35 - 12:00 **Massimo Vergassola** - UC San Diego
Fluid dynamics of embryonic development
- 12:00 - 12:25 **Larry Abbott** - Columbia University
Could a Fly Pass Physics 1?

Lunch 12:25 - 1:50

- 1:50 - 2:15 **Shlomo Havlin** - Bar Ilan University
Interdependent networks yield novel physical phase transitions
- 2:15 - 2:40 **Mark Freidlin** - University of Maryland
Long-Time Influence of Small Perturbations
- 2:40 - 3:05 **Chuck Newman** - NYU
Thermodynamic Limit of the first Lee-Yang Zero
- 3:05 - 3:40 **Jean Bricmont** - UC Louvain
Proofs of non-locality almost without experiments
- 3:40 - 4:10 **Coffee Break**
- 4:10 - 4:35 **Cristian Giardina** - UnivModena Reg Emil
SOLVABLE MODELS OF ENERGY TRANSPORT
- 4:35 - 5:00 **Micheal DeWeese** - University of Berkeley
Designing Optimal Non-Equilibrium Heat Engines

- 5:00 - 5:25 **Stephanie Palmer** - University of Chicago
How what you do shapes what you see
- 5:25 - 5:50 **Ivana Cvijovic** - Stanford University
Mapping the statistics of tissue residence and migration in the human antibody-mediated immunity
- 6:00 **Cocktails & Concert in the Fiber Optics Auditorium, sponsored by Springer's Journal of Statistical Physics (All are invited)**
- 7:50 **Banquet at the Hill Center - 7th Floor - Reservation required**

Monday, May 8, 2023

Registration and Breakfast 7:45 - 8:30

- 8:30 - 9:30 Short Talks: Session A
- 9:35 - 9:55 **Jan Wehr** - University of Arizona
Quantum trajectories of stimulated emission
- 9:55 - 10:20 **Francesco Zamponi** - CNRS and Ecole Normale Supérieure
Exact solution of liquid dynamics in infinite dimensions

Coffee Break 10:20 - 10:50

- 10:50 - 11:15 **Alexandre Morozov – Rutgers University**
SmartRunner: an adaptive approach to global optimization in discrete systems
- 11:15 - 11:40 **Uwe Tauber –Virginia Tech**
Spatially Inhomogeneous Stochastic Cyclic Competition Models: Stabilizing Vulnerable Ecologies Through Immigration Waves
- 11:40 - 12:05 **Laura Foini** - CNRS IPhT Saclay
The eigenstate thermalization hypothesis
- 12:05 - 12:30 **Human Rights Session** - Ian Jauslin and Joel Lebowitz

Lunch 12:30 - 1:50

- 1:50 - 2:15 **Joshua Shaevitz** - Princeton University
Polar and nematic states drive 3D pattern formation in the bacterium *Myxococcus xanthus*
- 2:15 - 2:40 **Leenoy Meshulam** - University of Washington
From 100k pigment cells to skillful camouflage: emerging simplicity in sleeping octopuses
- 2:40 - 3:05 **Ben Machta** - Yale University
A non-equilibrium critical model for bacterial chemosensory amplification
- 3:05 - 3:30 **Emil Yuzbashyan** - Rutgers University
Is nonequilibrium superconductivity a quantum or a classical phenomenon?

Coffee Break 3:30 - 4:00

- 4:00 - 4:25 **Marcelo Magnasco** - Rockefeller University
Robustness, Flexibility and Trainability of Complex Biological Networks

- 4:25 - 4:50 **Stephanie Palmer - University of Chicago**
 Laudatio for Bill Bialek
- 4:50 - 5:15 **Jean Bricmont – UC Louvain**
 Laudatio for Antti Kupianinen
- 5:15 - 5:40 **Francesco Zamponi - CNRS and Ecole Normale Supérieure**
 Laudatio for Jorge Kurchan
- 5:45 Cocktails and Dinner at the Hill Center - 7th Floor - Reservation required**

Tuesday, May 9, 2023

Registration and Breakfast 7:45 - 8:30

- 8:30 - 9:15 Short Talks: Session B
- 9:15 - 9:40 **Will Perkins - Georgia Tech**
 Tree contractions, correlation decay, and uniqueness for hard spheres
- 9:40 - 10:05 **Jani Lukkarinen - University of Helsinki**
 Generation and propagation of chaos in the stochastic Kac model

Coffee Break 10:05 - 10:35

- 10:35 - 11:00 **Leonid Korolov - University of Maryland**
 Perturbations of Parabolic Equations and Diffusion Processes with Degeneration:
 Boundary Problems and Metastability
- 11:00 - 11:25 **Avraham Soffer - Rutgers University**
 A new approach to Scattering: On the Asymptotic states of Nonlinear Dispersive and
 Hyperbolic equations with General Data
- 11:25 - 11:50 **Kostya Khanin - University of Toronto**
 On KPZ problem and statistics of stochastic flows
- 11:50 - 12:15 **Ramon Van Handel - Princeton University**
 Phase transitions and nonasymptotic random matrix theory

Lunch 12:15 - 1:25

- 1:25 - 1:50 **Hong-Tzer Yau - Harvard University**
 On the spectral gap of mean-field spin glass models
- 1:50 - 2:15 **Ivan Corwin - Columbia University**
 Stationary measures for open boundary systems
- 2:15 - 2:40 **Ron Peled - Tel Aviv University, Princeton University and IAS**
 Minimal Surfaces in Random Environment
- 2:40 - 3:05 **Tom Spencer - Institute for Advanced Study**
 Correlation lengths of spin systems with small magnetic field
- 3:05 - 3:30 **Michael Aizenman - Princeton University**
 Ruminations on Matrix Convexity and the Strong Subadditivity of Quantum Entropy