

120th Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, Room 114
Sunday, December 16, 2018 - Tuesday December 18, 2018

Honorees

Daniel Fisher, David Huse, and Mehran Kardar

Sunday, December 16th 2018

Registration and Breakfast 8:00 - 9:00

- 9:00 - 9:25 **Michael Brenner** - Harvard University
The quest to find a singularity of the Euler Equations: Theory, Simulations and Experiments
- 9:25 - 9:50 **Eugene Kolomeisky** - University of Virginia
Kelvin-Froude wake patterns of a traveling pressure disturbance
- 9:50 - 10:15 **Leonid Koralov** - University of Maryland
Large Time Behavior of Randomly Perturbed Dynamical Systems and a New Class of Boundary Value Problems
- 10:15 - 10:45 **Coffee Break**
- 10:45 - 11:10 **Ramin Golestanian** - Max Planck Institute for Dynamics and Self-Organization and Oxford University
Condensation transition in a simple model of colloids with diffusivity edge
- 11:10 - 11:35 **Yariv Kafri** - Technion
Long-range forces between bodies in active matter
- 11:35 - 12:00 **Giulio Biroli** - Institut de Physique Théorique
Collective phenomena in large interacting ecosystems
- 12:00 - 12:25 **Nihat Berker** - Kadir Has University and MIT
All-Temperature Ordering in Maximally Random Systems, Lower Lower-Critical Spin-Glass Dimension, and Continuously Variable Physical Dimension

Lunch 12:25 - 1:50

- 1:50 - 2:15 **Vedika Khemani** - Harvard University
Quantum chaos and the emergence of dissipative hydrodynamics under unitary dynamics
- 2:15 - 2:40 **Dan Stein** - NYU
Nature vs. Nurture in Complex (and Not-So-Complex) Systems
- 2:40 - 3:05 **Paul Chaikin** - NYU
Quantifying hidden order out of equilibrium
- 3:05 - 3:30 **Leo Radzihovsky** - University of Colorado
Chiral Critical Matter
- 3:30 - 4:00 **Coffee Break**
- 4:00 - 4:25 **Lucy Colwell** - University of Cambridge
Using evolutionary sequence variation to build predictive models of protein structure and function
- 4:25 - 4:50 **Rava Azeredo da Silveira** - Ecole Normale Supérieure
Neuroscience/Cognition
- 4:50 - 5:15 **Sidney Redner** - Santa Fe Institute
The Dynamics of Dumb and Less Dumb Foraging
- 5:15 - 5:40 **Terence Hwa** - UCSD
Growth and Expansion of Chemotactic Bacterial Populations in Open Environment

5:45 Cocktails & Concert sponsored by Springer (All are invited)

7:30 Banquet at Busch Dining Hall - Reservation required

Monday, December 17th 2018

Registration and Breakfast 8:00 - 8:40

- 8:40 - 9:40 **Short Talks: Session A**
- 9:40 - 10:05 **Michael Desai** - Harvard University
Observing evolutionary dynamics with lineage tracking
- 10:05 - 10:30 **Adam Nahum** - Oxford University
Simple models for nonintegrable quantum dynamics, and connections to classical statistical mechanics

Coffee Break 10:30 - 11:00

- 11:00 - 11:25 **Natan Andrei** - Rutgers University
Quench dynamics in the Sine-Gordon model - Loschmidt Echo and work distribution
- 11:25 - 11:50 **Shivaji Sondhi** - Princeton University
ETH without Thermalization
- 11:50 - 12:20 **Timothy Halpin-Healy** - Barnard College
Feynman's Gold

Lunch 12:20 - 1:50

- 1:50 - 2:15 **Aharon Kapitulnik** - Stanford University
Emerging Phenomena at a Quantum Phase Transition: the Magnetic Field-Tuned Superconductor to Insulator Transition
- 2:15 - 2:40 **Sarang Gopalakrishnan** - CUNY
Quantum phase transitions in spin chains with hyperuniform couplings
- 2:40 - 3:05 **Brian Swingle** - University of Maryland
Quantum Lyapunov Spectrum

Coffee Break 3:05 - 3:35

- 3:35 - 4:00 **John Barton** - University of California Riverside
Path integral inference of selection in evolving populations
- 4:00 - 4:25 **Leonid Mirny** - Massachusetts Institute of Technology
Physics of Chromosomes
- 4:25 - 4:50 **Michael Desai** - Laudatio for Daniel Fisher
- 4:50 - 5:15 **Shivaji Sondhi** - Laudatio for David Huse
- 5:15 - 5:40 **Timothy Halpin-Healy** - Laudatio for Mehran Kardar

5:40 Cocktails and Dinner at the Hill Center - 7th Floor

Tuesday, December 18th 2018

Registration and Breakfast 7:50 - 8:20

- 8:20 - 9:15 **Short Talks: Session B**
- 9:15-9:40 **Thorsten Emig** - CNRS & Massachusetts Institute of Technology
Modified Szegő–Widom Theorem for Block Toeplitz Matrices with Zero Modes & some Applications
- 9:40 - 10:05 **Andrej Kosmrlj** - Princeton University
Phase separation in multicomponent liquid mixtures
- 10:05 - 10:30 **Vadim Oganesyan** - CUNY
Scaling description of the many-body localized phase and its spectral signatures
- 10:30 - 10:55 **Thomas Nattermann** - University of Cologne
Vector Chiral phases in frustrated 2D classical XY-model and quantum spin chains

Coffee Break 10:55 - 11:25

- 11:25 - 11:50 **Romain Vasseur** - University of Massachusetts

Hydrodynamics of quantum integrable systems: transport, diffusion and operator spreading

11:50 - 12:15 **Abhishek Dhar** - International Centre for Theoretical Sciences
Light-cone spreading of perturbations and the butterfly effect in classical spin chains

12:15 - 12:40 **Human rights session: Ian Jauslin** - Princeton University

Lunch 12:40 - 1:40

1:40- 2:05 **Jed Pixley** - Rutgers University
'Magic-Angle' Semimetals

2:05 - 2:30 **Michael Gullans** - Princeton University
Entanglement structure of current-driven diffusive fermion systems

2:30 - 2:55 **Hans Jauslin** - Université de Bourgogne
Quantization of the electromagnetic field in interaction with a dissipative and dispersive medium; applications to quantum plasmonics

2:55 - 3:20 **Dan Pirjol**
Large deviations for time-averaged diffusions in the small time limit