

122nd Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, Room 114
Sunday, December 15, 2019 - Tuesday December 17, 2019

Honorees

Bulbul Chakraborty, Irene Gamba, and Andrea Liu

Sunday, December 15th 2019

Registration and Breakfast 8:00 - 9:00

- 9:00 - 9:25 **Thomas Chen** - University of Texas
Boltzmann equations via Wigner transform and dispersive methods
- 9:25 - 9:50 **Vincenzo Vitelli** - University of Chicago
Dualities and Non-Abelian Mechanics
- 9:50 - 10:15 **Corey O'Hern** - Yale University
Origin of the Jamming Scaling Exponents
- 10:15 - 10:45 **Coffee Break**
- 10:45 - 11:10 **Doug Durian** - University of Pennsylvania
The Statistical Mechanics of Granular Clogging
- 11:10 - 11:35 **Robert Strain** - University of Pennsylvania
Global mild solutions of the Landau and non-cutoff Boltzmann equation
- 11:35 - 12:00 **Luis Caffarelli**- University of Texas
Interactions among different diffusivity
- 12:00 - 12:35 **Claude Bardos** - Retired from University Denis Diderot
A baby version of the Landau damping and a road map to the Quasilinear approximation

Lunch 12:35 - 1:55

- 1:55 - 2:20 **Tom Lubensky** - University of Pennsylvania
Effective Medium Theory for Rigidity Percolation and Jamming Transitions
- 2:20 - 2:45 **Xiaoming Mao** - University of Michigan
How does rigidity emerge and disappear in low density soft matter?
- 2:45 - 3:10 **Emanuela Del Gado** - Georgetown University
Topology, softness and rigidity in gel networks
- 3:10 - 3:35 **Maria Carvalho** - Rutgers University and University of Lisbon
Spectral Gaps and Entropy Production for Kinetic Master Equations with Degenerate Jump Rates
- 3:35 - 4:05 **Coffee Break**
- 4:05 - 4:30 **Jen Schwarz** - Syracuse University
Biology across scales: From cerebellar shape to the correlated motion of chromatin
- 4:30 - 4:55 **Dapeng Bi** - Northeastern University
Mechanical Heterogeneity in Tissues Promotes Rigidity and Controls Cellular Invasion
- 4:55 - 5:20 **Chuck Knobler**- University of California, Los Angeles
The Role of RNA in Controlling the in vitro Co-Self-Assembly of Viruses
- 5:20 - 5:45 **Bill Gelbart** - University of California, Los Angeles
Continuing the search for the hydrogen atom of viruses
- 5:55 Cocktails & Concert sponsored by Springer (All are invited)**

7:55 Banquet at Busch Dining Hall - Reservation required

Monday, December 16th 2019

Registration and Breakfast 7:50 - 8:30

8:30 - 9:40 Short Talks: Session A

Coffee Break 9:40 - 10:10

- 10:10 - 10:35 **Jeff Morris** - CUNY City University of New York
Force Network Analysis in Shear-thickening Suspensions
- 10:35 - 11:00 **David Weitz** - Harvard University
Watching and listening to fracture
- 11:00 - 11:25 **Jorge Kurchan** - ENS Paris
Multithermalization
- 11:25 - 11:50 **Sidney Nagel** - University of Chicago
Memory, directed aging and Nature's greed
- 11:50 - 12:15 **Human Rights** - Ian Jauslin, Princeton University and Joel Lebowitz, Rutgers University

Lunch 12:15 - 1:35

- 1:35 - 2:00 **Lai-Sang Young** - New York University
Dynamical systems, statistical mechanics and a model of the brain
- 2:00 - 2:25 **Sumantra Sarkar** - Los Alamos
Multiscale simulation of protein-protein interaction
- 2:25 - 2:50 **Charles Radin** - University of Texas
Compacting sand by cyclic shear
- 2:50 - 3:15 **Qin Li** - University of Wisconsin, Madison
Boundary Layers in kinetic-fluid coupling

Coffee Break 3:15 - 3:45

- 3:45 - 4:10 **Alison Sweeney** - University of Pennsylvania
The Evolution of Equilibrium: thermodynamic pattern formation outside of living cells
- 4:10 - 4:35 **Ajay Gopinathan** - University of California, Merced
Frustration-induced phases in collectively moving cell clusters
- 4:35 - 5:00 **Jeff Morris** - Laudatio for Bulbul Chakraborty
- 5:00 - 5:25 **Sidney Nagel** - Laudatio for Andrea Liu
- 5:25 - 5:50 **Claude Bardos** - Laudatio for Irene Gamba

5:50 Cocktails and Dinner at the Hill Center - 7th Floor

Tuesday, December 17th, 2019

Registration and Breakfast 8:00 - 8:30

8:30 - 9:40 Short Talks: Session B

Coffee Break 9:40 - 10:10

- 10:10 - 10:35 **Robijn Bruinsma** - University of California, Los Angeles
Invariant Theory and Orientational Phase Transitions
- 10:35 - 11:00 **Jeremy England** - MIT and GlaxoSmithKline AI/ML
Adaptation by Least-rattling in Driven Multi-particle Assemblies
- 11:00 - 11:25 **Eleni Katifori** - University of Pennsylvania
Fluidic metamaterials

- 11:25 - 11:50 **Randy Kamien** - University of Pennsylvania
A new classification of topological defects
- 11:50 - 12:15 **Rossana Marra** - University of Rome "Tor Vergata"
Stationary solutions to the Boltzmann equation in the hydrodynamic limit

Lunch 12:15 - 1:20

- 1:20- 1:45 **Raffaele Esposito** - University of L'Aquila
Hydrodynamic Limit of a Kinetic Gas Flow Past an Obstacle
- 1:45 - 2:10 **Maja Taskovic** - University of Pennsylvania
On the relativistic Landau equation
- 2:10 - 2:35 **Kui Ren** - Columbia University
Unique determination of coefficients in a semilinear transport equation
- 2:35 - 3:00 **Ricardo J. Alonso** - Pontifical Catholic University of Rio
Emergence of exponentially weighted L_p -norms and Sobolev regularity for the Boltzmann equation
- 3:00 - 3:25 **Michael Kiessling** - Rutgers University
Microscopic foundations of relativistic kinetic plasma theory