121st Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, Room 114
Sunday, May 12, 2019 - Tuesday May 14, 2019
<u>Honorees</u>
Curtis Callan, Nigel Goldenfeld, and Horng-Tzer Yau

<u>Sunday, May 12th 2019</u>
Registration and Breakfast 8:00 - 9:00

9:00 - 9:25   **Vijay Balasubramanian** - University of Pennsylvania
Becoming what you smell: adaptive sensing and efficient coding in the olfactory system

9:25 - 9:50   **Aleksandra Walczak** - CNRS and Ecole Normale Supérieure
Prediction in immune repertoires

9:50 - 10:15   **Eric Carlen** - Rutgers University
Spectral Gaps for Reversible Markov Processes with Chaotic Invariant Measures: The Kac Process with Hard Sphere Collisions in Three Dimensions

10:15 - 10:45   *Coffee Break*

10:45 - 11:10   **Paul Bourgade** - New York University
Overlaps between eigenvectors of Ginibre matrices

11:10 - 11:35   **Edouard Brezin** - Ecole Normale Supérieure
Random matrices and geometry of surfaces, an historical survey

11:35 - 12:00   **Carl M. Bender** - Washington University in St. Louis
PT symmetry in quantum mechanics and quantum field theory

12:00 - 12:25   **Eugene M. Chudnovsky** - Lehman College
Human rights of scientists

Lunch 12:25 - 1:45

1:45 - 2:10   **Ayse Erzan** - Istanbul Technical University
Field theory and renormalization group on non-metric spaces

2:10 - 2:35   **Paul Goldbart** - University of Texas at Austin
Nature's simplest amorphous solids

2:35 - 3:00   **David Campbell** - Boston University
The Subtle Road to Equilibrium in the FPUT Model

3:00 - 3:25   **Christian Brennecke** - Harvard University
Bogoliubov Theory in the Gross-Pitaevskii Limit"

3:25 - 3:55   *Coffee Break*

3:55 - 4:20   **Vincenzo Vitelli** - University of Chicago
Odd Elasticity

4:20 - 4:45   **Arup Chackraborty** - MIT
Inducing cross-reactive antibody responses by vaccination: a crossroad of statistical mechanics

4:45 - 5:10   **Mehran Kardar** - MIT
Bacterial range expansions on a growing front: Roughness, Fixation, and Directed Percolation

5:10 - 5:35   **Shenshen Wang** - University of California, Los Angeles
Evolving generalists in changing landscapes

5:35 - 6:00   **Kalin Vetsigian** - University of Wisconsin (Madison)
Emergent eco-evolutionary phenomena in microbial communities

6:00   Cocktails & Concert sponsored by Springer (All are invited)
7:50   Banquet at Busch Dining Hall - Reservation required

Monday, May 13th 2019
Registration and Breakfast 8:00 - 8:40

8:40 - 10:00   Short Talks: Session A

Coffee Break 10:00 - 10:30

10:30 - 10:55   **Nicolas Sourlas** - École Normale Supérieure
                             Evidence for Supersymmetry in the Random-Field Ising Model

10:55 - 11:20   **Igor Klebanov** - Princeton University
                             Large N Tensor Models

11:20 - 11:45   **Stefano Olla** - Universite` Paris Dauphine-PSL
                             Fick's law with phase transitions

11:45 - 12:10   **Jeremy Quastel** - University of Toronto
                             The strong coupling fixed point of the KPZ universality class

12:10 - 12:35   **Bill Bialek** - Princeton University and The CUNY Graduate Center
                             RG-inspired approaches to networks of real neurons

Lunch 12:35 - 2:00

2:00 - 2:25   **Björn Hof** - IST Austria
                             The universality class of the transition to turbulence

2:25 - 2:50   **Katepalli Sreenivasan** - New York University
                             Around loops in hydrodynamic turbulence

2:50 - 3:15   **Hong-Yan Shin** - University of Illinois
                             How is turbulence born: Spatiotemporal complexity and directed percolation in driven fluids

3:15 - 3:40   **Pablo Sartori** - Institute for Advanced Study
                             What thermal physics can teach us about protein complexes

Coffee Break 3:40 - 4:10

4:10 - 4:35   **Tatyana Shcherbina** - Princeton University
                             Universality for random band matrices

4:35 - 5:00   **Paul Goldbart** - Laudatio for Nigel Goldenfeld
5:00 - 5:25   **Bill Bialek** - Laudatio for Curtis Callan
5:25 - 5:50   **Jeremy Quastel** - Laudatio for Horng-Tzer Yau

6:00 Cocktails and Dinner at the Hill Center - 7th Floor

Tuesday, May 14th, 2019
Registration and Breakfast 8:00 - 8:40

8:40 - 10:00   Short Talks: Session B

Coffee Break 10:00 - 10:30

10:30 - 10:55   **Phil Nelson** - University of Pennsylvania
                             The Role of Quantum Decoherence in Fluorescence Resonance Energy Transfer

10:55 - 11:20   **Stefan Boettcher** - Emory University
                             Complexity bounds on quantum search algorithms in finite-dimensional networks

11:20 - 11:45   **Juan Maldacena** - Institute for Advanced Study
                             Entanglement and the geometry of spacetime

11:45 - 12:10   **Christian Maes** - KU Leuven

Cosmic acceleration from quantum Friedmann equations

12:10 - 12:35   **Bhargav Peruvemba Narayanan** - Rutgers University
Diffusion on graphs

Lunch 12:35 - 1:45

1:45- 2:10   **Ramon Van Handel** - Princeton University
Quantum graphs and convex geometry

2:10 - 2:35   **Vieri Mastropietro** - University of Milan
Universality and Renormalization Group for Hall insulators

2:35 - 3:00   **Rodica Costin** - Ohio State University
Nonperturbative time dependent solution of a simple ionization model

3:00 - 3:25   **Ian Jauslin** - Princeton University
Solution of the time dependent Schrödinger equation for photoemission from a metal surface