Princeton Center for Theoretical Science

The Princeton Center for Theoretical Science is dedicated to exploring the frontiers of theory in the natural sciences. Its purpose is to promote interaction among theorists and seed new directions in research, especially in areas cutting across traditional disciplinary boundaries.

The Center is home to a corps of Center Postdoctoral Fellows, chosen from nominations made by senior theoretical scientists around the world. A group of senior Faculty Fellows, chosen from science and engineering departments across the campus, are responsible for guiding the Center. Center activities include focused topical programs chosen from proposals by Princeton faculty across the natural sciences. The Center is located on the fourth floor of Jadwin Hall, in the heart of the campus “science neighborhood”. The Center hopes to become the focus for innovation and cross-fertilization in theoretical natural science at Princeton.

Faculty Fellows:
Paul Steinhardt, Director
Igor Klebanov, Associate Director
Ravindra Bhatt
William Bialek
Curtis Callan
Roberto Car
David Spergel
Salvatore Torquato

Center Postdoctoral Fellows:
Dmitry Abanin 2008-2011
Benjamin Basso 2009-2012
Adam Brown 2009-2012
Bryan Clark 2009-2012
Thomas Klose 2007-2010
Jean-Luc Lehners 2007-2010
M. Lisa Manning 2008-2011
Matthew Reece 2008-2011
Branson Stephens 2007-2010
Aleksandra Walczak 2007-2010

Center Associate Postdoctoral Fellows:
Jeremy England, Lewis-Sigler Institute for Integrative Genomics 2009-2010
Shravan Hanasoge, Geosciences, 2009-2010

To find out more about Center Postdoctoral Fellowships and Programs see:
http://pcts.princeton.edu/pcts

Rare Events in Biology

Rare Events Program

February 3 - 4, 2010

Jadwin Hall, Fourth Floor
Room 407

Organizers
Jeremy England
Ned Wingreen

Co-sponsored by The D. E. Shaw Group
Rare Events in Biology
Wednesday, February 3, 2010

8:50 am  Welcoming Remarks
Ned Wingreen, Princeton University

9:00 - 9:45  "Rare Events and Phase Transitions in Reaction-Diffusion Models"
Alex Kamenev, University of Minnesota

9:45 - 10:30  "Rare events and epigenetic switching"
Anirvan Sengupta, Rutgers University

10:30 - 10:45  Coffee Break

10:45 - 11:30  "Individual histories and selection in heterogeneous populations"
Edo Kussell, New York University

11:30 - 11:45  "The B cell receptor protein repertoire"
Aleksandra Walczak, Princeton University

11:45 – Noon  "Optimal control of Rare Events"
Michael Khasin, Michigan State University

Noon - 1:30  Lunch at PCTS

1:30 - 2:15 pm  "Noisy out of necessity: Gene circuit dynamics at the single-cell level"
Gurol Suel, University of Texas, Southwestern

2:15 – 2:30  "Role of Non-genetic noise in decisions by axons"
Victor Luria, Columbia University Medical Center

2:30 – 2:45  "The emergence of stereotyped behaviors in C. elegans"
Greg Stephens, Princeton University

2:45 – 3:00  Coffee Break

3:00 - 3:45  "Sex chromosomes and speciation"
Daven Presgraves, University of Rochester

3:45 – 4:30  "Rare events in the history of life: the Origin of animals and the Permian mass extinction"
Doug Erwin, Smithsonian

4:30 – 5:30  Poster Session

Rare Events in Biology
Thursday, February 4, 2010

9:00 – 9:45 am  "Drift and adaptation in viral evolution"
Siobain Duffy, Rutgers University

9:45 – 10:30  "Rare fluctuations that can drive the evolution of asexual populations."
Michael Desai, Princeton University

10:30 – 10:45  Coffee Break

10:45 – 11:30  "Using whole genome sequencing to unravel the mechanisms of antibiotic resistance in MRSA"
Michael Mwangi, Rockefeller University

11:30 – 11:45  "Switching"
Pankaj Mehta, Princeton University

11:45 – Noon  "Transition from Primate to Rodent Visual Cortex"
Matthias Kaschube, Princeton University

Noon – 2:30 pm  Lunch

2:30 – 3:15  "Common human diseases due to many rare alleles: A paradigm for human genetics in the next generation of genomic technology"
Mary-Claire King, University of Washington, Seattle

3:15 – 4:00  "Rare events in the somatic evolution of cancer cells"
Carlo Maley, Wistar Institute

4:00 – 4:30  Physics Tea, Room 218 Jadwin Hall

*4:30 – 5:30  Physics Colloquium, Jadwin A-10

* Talks appropriate for General Audiences

Check http://pcts.princeton.edu/pcts/calendar.html for program updates and other Center activities