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
Andrei Bernevig
Duncan Haldane
Andrew Houk
Eve Ostriker
Thanos Panagiotopoulos
Frans Pretorius
Ned Wingreen

Center Postdoctoral Fellows
Ricard Alert-Zenon 2018-2021
Nathan Benjamin 2018-2021
Fani Dosopoulou 2018-2021
Anna Frishman 2016-2019
Daniel Lecoanet 2016-2019
Biao Lian 2017-2020
Abhinav Prem 2018-2021
Pierre Ronceray 2016-2019
Oren Slone 2018-2020
Yizhi You 2017-2020
Xinan Zhou 2018-2021

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

Transport in Disordered Environments
January 23-25, 2019

PCTS Seminar Room
Jadwin Hall, Fourth Floor, Room 407

Program Organizers
Ian Bourg, Sujit Datta, & Andrej Košmrlj
“Transport in Disordered Environments”

**Wednesday, January 23, 2019: Fluid flow**

8:30  
Light Breakfast

9:00-9:10  
Welcome/Introduction

9:10-9:50  
Exploring Wettability State and Alteration in Porous Media Multi-Phase Flow Systems: Applications to CO2 Storage  
Dorthe Wildenschild, Oregon State University

9:50-10:30  
Multiphase flow in porous media: wetting, disorder, and pattern formation  
Ruben Juanes, MIT

10:30-11:00  
Coffee break

11:00-11:40  
Fluid-fluid and fluid-solid reactions in multiphase flows  
Joaquin Jimenez Martinez, ETH Zurich

11:40-12:20  
Sujit Datta, Princeton University

12:20-2:00  
Lunch at PCTS

2:00-2:40  
Direct simulation of fluid flow in rough fractures  
Maša Prodanović, UT Austin

2:40-3:20  
Hubert King, ExxonMobil

3:20-4:00  
Coffee Break

4:00-4:40  
Anthony Kovscek, Stanford University

4:40-5:20  
Ronny Pini, Imperial College London

5:30  
WELCOME RECEPTION and Poster Session AT PCTS

**Thursday, January 24, 2019: Complex interactions**

8:30  
Light Breakfast

9:00-9:40  
Illenia Battiato, Stanford University

9:40-10:20  
Combinatorial Analysis of Anomalous Colloid Transport in Porous Media  
Markus Hilpert, Columbia University

10:20-10:50  
Coffee break

10:50-11:30  
MJ Abdolhosseini Qomi, UC Irvine

11:30-12:10  
Clay, water, and salt: controls on the permeability of fine-grained sedimentary rocks  
Ian Bourg, Princeton University

12:10-1:40  
Lunch at PCTS

1:40-2:20  
Nanoparticle transport in slowly-relaxing disordered media  
Jaci Conrad, University of Houston

2:20-3:00  
Microbial life in unsaturated soil – hotspots and self-organization  
Dani Or, ETH Zurich

3:00-3:30  
Coffee Break

3:30-4:10  
Aaron Dinner, Chicago

4:10-4:50  
Jamming and Clogging of Passive and Active Particles in Disordered Media  
Cynthia Reichhardt, LANL

4:50-5:30  
Flocking through disorder  
Denis Bartolo, ENS Lyon

**Friday, January 25, 2019: Biological transport**

8:30  
Light Breakfast

9:00-9:40  
Meredith Betterton, University of Colorado Boulder

9:40-10:20  
Push Yourself: Active Enzymes with Enhanced Diffusion  
Jennifer Ross, University of Massachusetts Amherst

10:20-11:00  
Coffee break

11:00-11:40  
Nikta Fakhri, MIT

11:40-12:20  
Phase separation in multicomponent liquid mixtures  
Andrej Košmrlj, Princeton University

12:20-12:30  
Concluding remarks

12:30-2:00  
Lunch at PCTS