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, Acting Associate Director
Adam Burrows
Curtis Callan
Roberto Car
David Huse
Salvatore Torquato
Jeroen Tromp

Center Postdoctoral Fellows
Benjamin Basso 2009-2012
Adam Brown 2009-2012
Bryan Clark 2009-2012
Yoav Kallus 2011-2014
Mariangela Lisanti 2010-2013
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Elisabetta Matsumoto 2011-2014
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To find out more about Center Postdoctoral Fellowships and Programs see:
http://pcts.princeton.edu/pcts

PRINCETON CENTER FOR THEORETICAL SCIENCE

Quantum Statistical Mechanics and Quantum Computation

22-23 March 2012

Room 111, Jadwin Hall

Organizers
Sanjeev Arora
Benjamin Hsu
Roderich Moessner
Shivaji Sondhi

Quantum Statistical Mechanics and Quantum Computation

Thursday, 22 March 2012

8:50 am	**Welcoming Remarks**
9:00 – 10:00	"The complexity of ground states" **Itai Arad & Umesh Vazirani**
10:00 – 11:00	"The complexity of ground states," continued **Umesh Vazirani & Itai Arad**
11:00 – 11:45	**Coffee break**
11:45 – 12:45	"Computational Complexity of Very Symmetric Hamiltonians" **Daniel Gottesman**
12:45–3:00	**Lunch on fourth floor at PCTS**
3:00 – 4:00	"A Dynamical System that Solves Hard Problems" **Veit Elser**
4:00 – 4:30	**Coffee break**
4:30 – 5:30	"Criticality without frustration for quantum spin-1 chains" **Sergey Bravyi**
6:30 pm	**Dinner at Triumph Brewery** **138 Nassau Street** **Princeton, NJ 08542** **609-924-7855**

Quantum Statistical Mechanics and Quantum Computation

Friday, 23 March 2012

9:00 – 10:00	"Quantum XOR games and non-commutative Grothendieck inequalities" **Oded Regev**
10:00 - 11:00	"Some Thoughts and Open Problems about Simulated Annealing and the Adiabatic Algorithm." **Scott Aaronson**
11:00 – 11:30	**Coffee break**
11:30 – 12:30	"Adiabatic Quantum Computation and Stochastic Hamiltonians" **Barbara Terhal**
12:30–2:15	**Lunch on fourth floor at PCTS**
2:15 – 3:15	"Quantum optimization in the thermodynamic limit" **Chris Laumann**
3:15 – 4:15	"A review of recent results on quantum optimization problems, and the connection with many body localization" **Francesco Zamponi**
4:15 – 4:30	**Coffee break**
4:30 – 5:30	Discussion