The Mathematics Research Center
Distinguished Lecturer Series
presents

Thomas Spencer
(IAS, Princeton)

LECTURE 1: Thursday, November 13
4:15PM in 380-W
“Randomness in classical and quantum dynamics”
(Reception at 3:00pm, before the talk, in the new 4th floor lounge!)

LECTURE 2: Friday, November 14
1:30pm in 383-N
“Duality and symmetry in statistical mechanics and random matrices”

LECTURE 3: Tuesday, November 18
11:00am in 383-N
“Central Limit Theorems in Statistical mechanics”
Lecture 1: Thursday, November 13
4:15pm in 380-W
“Randomness in classical and quantum dynamics”
(Reception at 3:00pm, before the talk, in the new 4th floor lounge!)

Abstract: This talk will review conjectures and theorems about some simple
dynamical models. These include random walk, edge-reinforced random
walk, probabilistic cellular automata and a classical model of quantum dynamics.
Pictures will help to give intuitive view of the complicated dynamics.

Lecture 2: Friday, November 14
1:30pm in 383-N
“Duality and symmetry in statistical mechanics and random matrices”

Abstract: I will introduce some basic models of interacting spins on a
lattice and describe transitions from order to disorder. Spins will typically
take values in a symmetric space such as the circle or sphere. Duality and
symmetry play a central role in the description and analysis of phase
transitions. Certain spin systems provide a dual representation for spectral
problems in random matrix theory. Universality of Wigner-Dyson statistics
can be formally understood in terms of the collective behavior of spins.

Lecture 3: Tuesday, November 18
11:00am in 383-N
“Central Limit Theorems in Statistical mechanics”

Abstract: We review some results and conjectures about central limit
theorems in statistical mechanics. In 2 dimensions, new central limit
theorems arise in the study of random matrices, Coulomb gases and dimers
for certain ranges of parameters. Central limit theorems for the self-avoiding
walk and the Ising model in 4 or more dimensions are also described.