abstract

COMPUTER SCIENCE/DISCRETE MATH I
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Let M be an arbitrary n by n matrix. We study the condition number a random perturbation $M+N_n$ of M, where N_n is a random matrix, motivated by a problem raised by Spielman and Teng. It is shown that, under very general conditions on M and N_n, the condition number of $M+N_n$ is polynomial in n with very high probability.

The main novelty here is that we allow N_n to have discrete distributions. Discreteness posed a considerable mathematical challenge which we were able to overcome by bringing in ideas and tools from additive combinatorics. The core of our proof is the so-called Inverse Littlewood-Offord theorem which
characterizes all integer sequences with many colliding subsums.

Joint work with T. Tao (UCLA)