# The University of Chicago

# Department of Computer Science & Mathematics

# Combinatorics & Theoretical Seminar

PRESENTS:

Rocco Servedio



Columbia University

Title: Learning Sums of Independent Commonly Supported Integer Random Variables

Abstract:

For S a finite set of natural numbers, an "S-supported SICSIRV" is a random variable which is the sum of N independent random variables each of which is supported on S. So, for example, if S = {0,1}, then an S-supported SICSIRV is a sum of N independent but not necessarily identically distributed Bernoulli random variables (a.k.a. a Poisson Binomial random variable).  Daskalakis et. al. (STOC'12, FOCS'13) have shown that for S={0,1,...,k-1}, there is an algorithm for learning an unknown S-SICSIRV using poly(k,1/\epsilon) draws from the distribution and running in poly(k,1/\epsilon) time, independent of N.

In this work we investigate the problem of learning an unknown S-SICSIRV where S={a\_1,...,a\_k} may be any finite set.  We show that \* when k=3, it is possible to learn any S-SICSIRV with poly(1/\epsilon) samples, independent of the values a\_1,a\_2,a\_3;

Tuesday, May 2, 2017

3:00 pm

Ryerson 251

Host: Prof. Alexander Razborov

Refreshments will be served prior to the talk at 2:30 in Ry. 255