

STATISTICS COLLOQUIUM

MONDAY, SEPTEMBER 24, 2012

TALK: 4:00 PM — SCIENCE CENTER RM. 309

RECEPTION: 5:15 PM — SCIENCE CENTER, 7TH FLOOR

**“Limit theorems in discrete probability
using distributional transformations”**

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ABSTRACT

An important theme in probability and statistics is that difficult-to-compute quantities involving large random structures can be much more easily approximated by analogous quantities in an appropriate limiting object; the Central Limit Theorem and the Berry-Esseen Theorem are classical examples. Here we describe a new approach for obtaining these and related results using couplings constructed in a challenging application of interest which can reveal a stochastic fixed point equation that characterizes and reveals the limit distribution. These are then the key ingredients for newly developed versions of Stein's method that give explicit error bounds and rates of convergence for a distributional limit theorem. The applications discussed here will be drawn from random graphs, branching processes, random walks, randomized algorithms, and queueing models.