



The University of Chicago  
Department of Statistics

MASTER'S THESIS PRESENTATION

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**WEI CAI**

Department of Statistics  
The University of Chicago

**Random Matrices with Uncorrelated Entries**

**WEDNESDAY, May 11, 2011, at 2:00 PM**  
110 Eckhart Hall, 5734 S. University Avenue

**ABSTRACT**

Random matrices whose entries are iid with mean zero and variance one have empirical spectral distribution converging to Marchenko-Pastur distribution. In this study, I considered random matrices with uncorrelated entries constructed of orthogonal polynomials or orthonormal basis. By strong law of large number and central limit theorem, they are supposed to converge to some distribution, even if that distribution might not be Marchenko-Pastur. The simulations suggested that two of the five random matrices (sin basis and haar basis) have certain patterns of the ESD as the data size gets bigger. But the other three (Legendre polynomials, Chebyshev polynomials and Hermite polynomials) do not achieve simple patterns.