THE UNIVERSITY  OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Probability Seminar

Kronecker-product random matrices and a matrix least squares problem

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Abstract

We study the eigenvalue distribution and resolvent of a Kronecker-product random matrix model, which has a mean-field structure in each Kronecker factor but not a global mean-field structure over all variables. Our main results are a quantitative approximation for the Stieltjes transform, a deterministic equivalent approximation for the resolvent, and sharp estimates for entries and blocks of the resolvent on global spectral scales. Our study is motivated by consideration of a matrix-valued least-squares optimization problem, where the dimension of the optimization variable is comparable to the dimensions of the random input matrices of the problem. Our analyses imply an asymptotic characterization of the optimal solution and its associated optimal objective value. This is joint work with Renyuan Ma.

Date:	May 22, 2025 (Thursday)
Time:	9:00 – 10:30 am
Venue:	ZOOM: https://hku.zoom.us/j/ Meeting ID: 960 0858 9629 Password: 907598

All are welcome