



Probability Seminar

Spectral edge of deformed non-Hermitian random matrices

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Abstract

In this talk, we consider the spectral edge of large-dimensional non-Hermitian random matrices with a non-trivial bias. More precisely, we study square random matrices of the form $A+X$ where X has random, centered entries and A is a deterministic bias, and A and X are on the same scale so that their contributions to the spectrum of $A+X$ are comparable. Under this setting, it is known that the macroscopic eigenvalue density of $A+X$ typically can only have two types of behavior around the boundary of its support, (i) a jump discontinuity or (ii) a quadratic decay. We show that the local eigenvalue statistics are universal around the two types of edges, depending only on the type and the symmetry class. If time permits, we will also discuss local laws associated to the ensemble $A+X$, in particular a new, effective method in proving them referred to as the "Zig-Zag strategy".

Date:	December 30, 2024 (Monday)
Time:	4:00 – 5:00 pm
Venue:	Room 210, Run Run Shaw Building, HKU

All are welcome