



**THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY**

**Department of Mathematics**

## **SEMINAR ON PROBABILITY**

# **Delocalization of eigenvectors of large random matrices**

By

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### Abstract

We consider the eigenvectors of large Wigner matrices which are self-adjoint  $N \times N$  matrices with centered entries of variance  $1/N$ . When the entries of the matrix are Gaussian random variables, each eigenvector is uniformly distributed on the sphere and, as such, truly delocalized. For this specific model, many estimates can be directly computed and there has been many recent works generalizing these to Wigner matrices and beyond. In this talk, I will present recent works on some of these estimates such as sharp upper bounds on the largest entry of an eigenvector, quantum unique ergodicity, as well as joint Gaussian fluctuations and convergence of eigenvector processes. I will then give a global presentation of how to prove universality of these different properties.

**Date : 13 May 2025 (Tuesday)**

**Time : 3:00p.m. – 4:00p.m.**

**Venue : Lecture Theatre H (near lift 27/28)**

*All are Welcome!*