Title: On eigenvector overlaps for random matrices

Abstract:

Given a large random matrix, how do its eigenvectors typically look like?

In this two-part talk, we will first describe and explain a strong form of quantum unique ergodicity (QUE) and Gaussian fluctuations around QUE for deformed Hermitian Wigner matrices. Afterwards, in the second part, we will discuss an almost optimal lower bound on the so-called eigenvalue condition number (or eigenvector overlap) for deformed non-hermitian i.i.d. matrices, which measures the stability of its spectrum. This talk is based on joint work with Giorgio Cipolloni, László Erdös, Oleksii Kolupaiev, and Dominik Schröder.