ID de Contribution: **1** Type: **Non spécifié**

Local perturbations of Toeplitz matrices

jeudi 25 septembre 2025 15:10 (50 minutes)

This talk is about the asymptotic spectral theory of tridiagonal Toeplitz matrices with matrix entries, with periodicity broken on a finite number of entries. Varying the ranks of these perturbations allow to interpolate between open boundary and circulant Toeplitz matrices. While the continuous parts of the limit spectrum only depends in a crucial manner on these ranks and no other aspect of the perturbation, the outliers of the spectrum depend continuously on the local perturbation. The proof is essentially based on a generalized Widom formula for the characteristic polynomial. The mathematical results are illustrated by numerics. Joint work with Lars Koekenbier.

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