UNIVERSITÄT BIELEFELD

Faculty of Physics
Faculty of Mathematics

THE UNIVERSITY OF MELBOURNE

Seminar

Bielefeld - Melbourne Random Matrices

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Non-ergodic Extended States in the β-ensemble

The β-ensemble involves a joint density of energy levels where β can be understood as the inverse temperature of an equivalent Coulomb gas model. Dumitriu and Edelman proposed a matrix representation of β-ensemble. If we consider β = N^{−γ} then we find that the Anderson localization-delocalization transition occurs at γ = 1 and ergodicity breaks down at γ = 0. Thus Non-Ergodic Extended (NEE) phase is observed over a finite interval of parameter values (0 < γ < 1). We find that the level repulsion-clustering transition coincides with the breaking of ergodicity while long-range correlation among the energy levels exhibit a heterogeneous behavior in the NEE regime. We also observe that there are O(N^γ) localized states in the NEE regime which indicates a possibility of spectral inhomogeneity.

Based on the work under the supervision of Anandamohan Ghosh (10.1103/PhysRevE.105.054121).

Wednesday, 15th February 2023,
0900 hrs CET

Zoom Conference call— Please contact Leslie Molag (lmolag@math.uni-bielefeld.de) for details regarding access