

Laboratoire de Physique Théorique et Hautes Energies

Unité Mixte de Recherche (UMR 7589) de Sorbonne Université et du CNRS

SEMINAIRE du LPTHE

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ICTP Trieste

Phase transitions in the quantum transport problem

Linear statistics on ensembles of random matrices occur frequently in many applications. We present a general method to compute probability distributions of linear statistics for large matrix size N . This is applied to the calculation of full probability distribution of conductance and shot noise for ballistic scattering in chaotic cavities, in the limit of large number of open electronic channels. The method is based on a mapping to a Coulomb gas problem in Laplace space, displaying phase transitions as the Laplace parameter is varied. As a consequence, the sought distributions generally display a central Gaussian region flanked on both sides by non-Gaussian tails, and weak non-analytical points at the junction of the two regimes.

Bibliothèque du LPTHE, tour 13/14, 4^{ème} étage

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