SEMPARIS – Séminaires en région parisienne

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Theory of quantum matter

Jeudi 24 Mars 2022, 14 :00
LPTHE, LPTHE library 13-14 4th floor and online (see end of the abstract)
Domaines : math-ph

Titre : *Thermalisation and chaos in many-body quantum systems*

Orateur : **Andrea De Luca (LPTM Cergy)**

Résumé : *I will present a brief overview about the general principles controlling the out-of-equilibrium dynamics of closed quantum systems with a large number of degrees of systems. I will discuss the main mechanisms which allow an isolated system undergoing fully unitary dynamics to be well described by a thermal ensemble. I will stress the important role played by conservation laws, ergodicity and chaos as it manifests itself in the correlation of energy levels and their repulsion. Quantum chaos is an evasive concept which, at the level of single particles, is historically understood by comparing spectral features with those of an ensemble of random matrices. I will then introduce random unitary circuits for which several dynamical properties are computable explicitly at least in the limit of large local Hilbert space dimensions. In particular, I will employ them to derive the general features of the spectral correlations in many body systems : Only at times larger than the Thouless time, the random matrix behavior is recovered. Beyond the well-known universality of random matrices, I will derive scaling functions which characterize a universal transient regime towards the random matrix prediction.*
https ://cnrs.zoom.us/j/98058415199 ?pwd=ZitGWmxYUEZSaDBGUExVT2xndTNUZz09
ID de réunion : 980 5841 5199 Code secret : Q6DfyW
