Séminaire de physique statistique

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Lundi 04/02/2019, 14h00-15h00

Orme des Merisiers Salle Claude Itzykson, Bât. 774

**The Eigenstate Thermalization Hypothesis and matrix
models**

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The Eigenstate Thermalization Hypothesis (ETH) implies a form for the matrix elements of local operators between eigenstates of the Hamiltonian, expected to be valid for chaotic systems. Another signal of chaos is a positive Lyapunov exponent, defined on the basis of out-of-time-order correlators. The simultaneous consideration of these two aspects for non-integrable systems raises the question of how high order correlation functions are described within the ETH ansatz. I will argue that in order to describe them accurately, correlations between matrix elements unrelated by symmetry, usually neglected, have to exist.

Moreover I will propose that generic matrix models may better describe the form of operators in a narrow energy shell, and in particular how going beyond the Gaussian case is necessary to describe the regime towards non-ergodic phases, such as the many body localization transition. Universal properties of these models relevant for the ETH will be discussed.