



University of Crete
Department of Physics

Physics Colloquium

Thursday, 1 December 2022 | 17:00 – 18:00, Seminar Room 3rd floor

Signatures of ergodicity breaking in relativistically invariant quantum many body systems

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ABSTRACT

The emergence of thermalization in isolated quantum many body systems is one of the fundamental open questions of statistical mechanics. One way to explain it is through the Eigenstate Thermalization Hypothesis (ETH), a set of mathematical properties of the matrix elements of observable quantities in the system's energy eigenstates, that when satisfied are expected to guarantee ergodicity. While ETH has been numerically verified in a large number of non-integrable lattice models, deviations have been recently discovered in a special class of models, so that the dynamics of such models are characterized by oscillations that can persist over unusually long times. I will present numerical evidence that similar deviations from ETH are common in relativistically invariant continuous models, arguing that they are tightly linked to relativistic invariance itself.