

MAR15-2014-000760

Abstract for an Invited Paper
for the MAR15 Meeting of
the American Physical Society

Quantum thermalization and the dynamics of entanglement

DAVID HUSE, Princeton University

I will address some aspects of how conventional thermodynamics emerges from quantum many-body physics, and also discuss one generic example where it fails to emerge, namely many-body Anderson localization. One aspect of this is the Eigenstate Thermalization Hypothesis (ETH), which suggests alternative statistical-mechanical ensembles that consist of only a single eigenstate of the many-body Hamiltonian. These ensembles, unlike the standard statistical mechanical ensembles, can detect many-body localization and the dynamical phases and quantum phase transitions within the localized phase. I will also discuss the dynamics of many-body quantum entanglement.