

Abstract submitted to the  
NATO ADVANCED RESEARCH WORKSHOP  
New materials for thermoelectric applications: theory and experiment  
September 19 - 25, 2011 Hvar, Croatia

## **Many-body localization**

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Submitted : 11-09-2011

*Keywords* : localization, transport, dynamics

I will review some recent theoretical and numerical results that suggest the existence of a novel localization transition in ensembles of interacting particles at a finite temperature. This purely dynamical transition lacks thermodynamic signatures akin to the Anderson transition and can be realized provided coupling to environment is sufficiently weak. Signatures of this phenomenon range from vanishing diffusion constants, divergence of lifetimes of local excitations and concomitant suppression of entanglement in excited multiparticle states, and, fundamentally, the breakdown of statistical mechanics.