Seminar/Talk

[Webinar] Many-body localisation: a tale of correlations and constraints on Fock space

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Many-body localised phases of matter fall outside the paradigm the conventional statistical mechanics and thermodynamics. A natural question thus is what minimal and generic properties random many-body Hamiltonians must possess for a localised phase to be stable. In this talk, I will discuss two complementary answers by treating the problem on the Fock space wherein it is a disordered hopping problem on a complex correlated graph. The first of them is strong correlations in the Fock-space on-site energies which arise since the exponentially large in system size number of Fock-space site energies are built out of polynomially large random numbers for local Hamiltonians. Secondly, constrained dynamics on the Fock space can also lead to localisation. The theory is rooted in analytic but approximate calculations of the propagators on the Fock space and supported by numerical results of spectral and dynamical properties of microscopic Hamiltonians.

Tuesday, April 21, 2020 01:00pm - 03:00pm

Webinar

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