ID de Contribution: **34** Type: **Invited talk**

Bringing together views on many-body localisation

mercredi 15 juin 2016 15:15 (45 minutes)

The phenomenon of many-body localisation received a lot of attention recently, both for its implications in condensed-matter physics of allowing systems to be an insulator even at non-zero temperature as well as - maybe most importantly - in the context of the foundations of quantum statistical mechanics, providing examples of systems showing the absence of thermalisation following out-of-equilibrium dynamics. Still, it seems fair to say that many aspects of it are still unsatisfactorily understood.

In this talk, following an introduction into recent progress on thermalisation of closed quantum systems, I will make the attempt to bring together several aspects of the phenomenology of many-body localisation, attaining new insights into the connections between seemingly unrelated features. Ideas of entanglement area laws, Lieb-Robinson bounds, filter functions, approximately local constants of motion, transport, and tensor network states such as matrix-product states and matrix-product operators will feature strongly. We will discuss experimentally accessible witnesses of many-body localisation in cold atomic quantum simulators that have the potential to clearly distinguish Anderson insulators from many-body localised models.

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Classification de Session: Afternoon Session1