

Many-body localization and global symmetries

mardi 14 juin 2016 11:30 (45 minutes)

In this talk, I will describe some general constraints on the existence of many-body localized (MBL) phases in the presence of global symmetries. I will start by considering the example of the random-bond XXZ spin chain and argue using real space renormalization group techniques that interactions drive the system into a many-body localized spin glass phase with spontaneously broken particle-hole symmetry. Based only on representation theory, I will then derive some general Mermin-Wagner-type principles governing the possible fates of non-equilibrium dynamics in isolated, strongly disordered quantum systems. In particular, I will show that MBL cannot exist in the presence of non-Abelian symmetries. Consequences for the classification of MBL protected topological phases (and Floquet phases) will be discussed.

Orateur: VASSEUR, Romain (University of California Berkeley)

Classification de Session: Morning Session 2