Jozef Stefan Institute, Department of Theoretical Physics

Solid State Group Seminars

Jacek Herbrych

University of Crete (Heraklion, Greece)

Dynamical structure factor in disordered model of interacting fermions

I will present the behavior of the dynamical structure factor S(q,ω) in the whole range of wavevectors q within the prototype one-dimensional model of many-body localization (MBL). Extracted effective dynamical conductivities and current-relaxation rates confirm strong dependence on disorder but modest variation with q. Furthermore, I will present an analytical self-consistent approximation based on the perturbation theory to qualitatively account for the nontrivial features of dynamical quantities at all q: the emergence of the maximum in dynamical conductivities, nonanalytical low-omega variation in the ergodic phase, and the transition to the nonergodic (MBL) phase. Finite-size scaling also reveals the possibility of the subdiffusive behavior in the ergodic regime.

Tuesday, Oct 11,3:00pm

Čajna soba F1, Jozef Stefan Institute