ICTS Seminar

Title : Hysteretic quantum phase transitions in a strongly-correlated resonantly driven optical lattice

Speaker : Shovan Dutta (University of Cambridge, UK)

Date : Tuesday, 27th April 2021

Time : 03:00 pm

Abstract : I will talk about an ongoing theory-experiment collaboration where we realised a fully controllable driven optical lattice for probing nonequilibrium dynamics of quantum phase transitions with strongly interacting ultracold atoms. Resonant shaking of a quasi-1D optical lattice hybridises the lowest two Bloch bands, driving a novel transition from a Mott insulator to a \pi-superfluid at the edge of the Brillouin zone. This transition is first-order for weak shaking and continuous at strong shaking. Sweeping across the two types of transitions produces strikingly different dynamics and spatial correlations, exhibiting metastability and hysteresis. These observations are in good quantitative agreement with predictions from Density-Matrix Renormalisation Group (DMRG) simulations.

Venue : Please click on the link to join the seminar
https://zoom.us/j/98567433676?pwd=UG5BeG1MVFVQanRkeCttNGhZZ3dWdz09
Meeting ID: 985 6743 3676
Passcode: 564309