



# 清华大学高等研究院

Institute for Advanced Study, Tsinghua University

## 学术报告

**Title:** Holographic Mapping of Many-Body Localized System by Spectrum Bifurcation Renormalization Group

**Speaker:** Yizhuang You ( *Harvard University* )

**Time:** 4:00pm, Wednesday, 2016-09-21

**Venue:** Conference Hall 322, Science Building, Tsinghua University

### Abstract

We introduce the spectrum bifurcation renormalization group (SBRG) as an improvement of the excited-state real space renormalization group (RSRG-X) for qubit models. Starting from a disordered many-body Hamiltonian in the full many-body localized (MBL) phase, the SBRG flows to the MBL fixed-point Hamiltonian, and generates the local integrals of motion and the matrix product state representations for all eigenstates. The method is applicable to both spin and fermion models with arbitrary interaction strength on any lattice in all dimensions, as long as the models are in the full MBL phase. As a Hilbert-space preserving RG, the SBRG also generates an entanglement holographic mapping, which duals the MBL state to a fragmented holographic space.