



# 清华大学高等研究院

Institute for Advanced Study, Tsinghua University

## 学术报告

**Title:** **Open quantum many-body systems:  
when interactions meet dissipations**

**Speaker:** **Zi Cai** (*Ludwig-Maximilians Universitat Munchen*)

**Time:** **10:30am**, Monday, April 28, 2014

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

### Abstract

Understanding quantum systems embedded into environment is of particular theoretical and practical importance. The situation becomes particularly interesting and complex when the system itself is already an interacting many-body system, which provides novel perspectives to quantum many-body physics. In this talk, I will present two examples to show how the conspiracy of dissipation and interaction can significantly change the behaviors of the quantum systems and give rise to novel phenomena, including the algebraic decoherence behavior and a dissipation-induced localization. Our numerical methods can be applied to various open quantum many-body systems ranging from the Rydberg atoms and trapped ions to quantum computational systems based on solid-state devices (e.g. rf-SQUIDs, Solid-state qubits in diamonds nanostructures and quantum wells).