



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学学术报告 Physics Seminars (biweekly)

- Title:** Mapping the phase diagram of spinor condensates via adiabatic quantum phase transitions
- Speaker:** Yingmei Liu
(*Department of Physics, Oklahoma State University*)
- Time:** 3:15pm, Wednesday, June 18, 2014
(2:45~3:15pm, Tea, Coffee, and Cookie)
- Venue:** Conference Hall 322, Science Building, Tsinghua University

Abstract

We experimentally study two quantum phase transitions in a sodium spinor condensate immersed in a microwave dressing field. In contrast to magnetic fields, microwave dressing fields can induce both negative and positive values of the quadratic Zeeman energy. We demonstrate that many previously unexplored regions in the phase diagram of spinor condensates can be investigated by adiabatically tuning a microwave field across one of the two quantum phase transitions. This method overcomes two major experimental challenges associated with some widely used methods, and is applicable to other atomic species. Agreements between our data and the mean-field theory for spinor Bose gases are also discussed.