

清华大学高等研究院
Institute for Advanced Study, Tsinghua University
物理学术报告
Physics Seminars (biweekly)

Title: Two examples of one-dimensional cold gases in new many-body regimes

Speaker: Prof. W. Vincent Liu
University of Pittsburgh, Pennsylvania, USA

Time: 3:15 pm, Wednesday, Sept 12, 2012
(3:00~3:15pm, Tea, Coffee, and Cookie)

Venue: Conference Hall 322, Science Building, Tsinghua University

Abstract:

Cold atom research has flourished in the direction of designing systems to quantum emulate important models in condensed matter physics. In this talk, however, I will focus on another different, exciting thrust, namely, to explore some unique aspects of cold atom systems. One of such examples is a one-dimensional Fermi gas of Feshbach tuned strong interaction and large spin population imbalance. Another system is interacting fermions on a two-leg ladder of unequal parity orbitals, which is derived from the experimentally realized double-well lattices by dimension reduction and is found topological.

References: [1] PRA 78, 063605 (2008); [2] PRL 103, 140404 (2009); [3] Nat. Phys. 7, 101 (2011); [4] Nat. Phys. 8, 6770 (2012); [5] arXiv:1205.0254. Work done in collaboration with M. T. Batchelor, S. Das Sarma, X. Guan, A. Hemmerich, M. Lewenstein, X. Li, M. Oshikawa, K. Sun, and E. Zhao. Acknowledge support by ARO, AFOSR, and DARPA of the U.S. DOD, A. Mellon Foundation, and NSF of China.