Weekly Seminar

Spin-Orbit Coupled Quantum Gases: New Physics and Challenges

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Time: 4:00pm, March. 12, 2014 (Wednesday)
时间：2014年3月12日（周三）下午4:00
Venue: Room 607, Science Building 5
地点：理科五号楼607会议室

Abstract

In this talk I will review recent progresses in studying spin-orbit coupling in ultracold quantum gases. I will discuss several examples of new quantum states and phenomena when spin-orbit coupling is introduced to ultracold atomic gases, which include a novel type of superfluid phase in a Bose gas with stripe order due to the single particle ground state degeneracy and an intriguing finite temperature phase diagram, and novel fermion pairing structure of a resonantly interacting Fermi gas. I will also discuss great challenges in this direction due to heating problem, and I will present a way to overcome the difficulty by utilizing highly magnetic lanthanide atoms.

About the Speaker

Prof. Zhai received his Ph.D from Institute for Advanced Study of Tsinghua University in 2005. Then he was postdoctoral fellow in Ohio-State University from 2005-2007 and in University of California at Berkeley from 2007-2009. He returned to Institute for Advanced Study of Tsinghua University as a Member in 2009 and became a tenured Member in 2012. His research mainly focuses on theory of ultracold quantum gases.