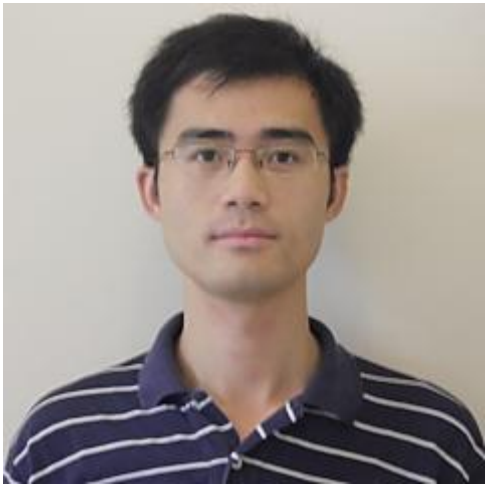
北京大学量子材料科学中心

International Center for Quantum Materials, PKU

ICQM Weekly Seminar

When bosons see double-well potentials



Qi Zhou

The Chinese University of Hong Kong

Time: 4:00pm, Aug29, 2012 (Wednesday)

时间：2012年8月29日 （周三）下午4:00

Venue: Room 607, Conference Room A , Science Building 5

地点：理科五号楼607会议室

Abstract

Current studies on cold atoms have been focusing on interacting particles in a single trap or a standard optical lattice. In this talk, I will show how the double-well potential leads to new many-body phenomena of cold atoms. In the first example, I will discuss the case that the energy level mismatch in a single double-well potential is randomly distributed. This simple system captures several striking features of a long-standing problem regarding the interplay between interaction and disorder in bosonic systems, and reveals the underlying physics for these features transparently. In the second example, I will show how a superlattice of double-well potential gives rises to novel condensates and new macroscopic quantum phenomena that are absent in an ordinary optical lattice.

About the Speaker

Prof. Zhou received his Ph.D. from The Ohio State University in 2009, and B.S. from Tsinghua University in 2003. After working as a postdoctoral fellow at Joint Quantum Institute at University of Maryland, he joined the faculty of The Chinese University of Hong Kong in 2011. His research focuses on many-body effects in quantum gases, including ultra cold bosons and fermions in synthetic gauge fields, macroscopic quantum phenomena in multi-species mixtures of atoms, strongly correlated systems in optical lattices, few- and many-body problems of strongly interacting atoms.