

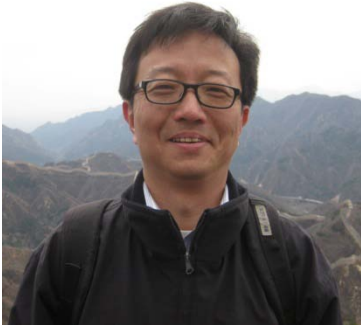


Weekly Seminar

Incompressible Quantum Glass state and Pair Supersolid state of Bosons

Wenan Guo

Physics Department, Beijing Normal University



Time: 4:00pm, May 22, 2013(Wednesday)

时间: 2013年5月22日 (周三) 下午4:00

Venue: Conference Room 607, Science Building 5

地点: 理科五号楼607会议室

Abstract

Quantum glass and pair supersolid are novel quantum states of interacting lattice bosons. I will first discuss the quantum glass state of lattice bosons with random potentials. Its properties at zero temperature are controlled by rare large regions of superfluid surrounded by Mott insulator. These regions make the state gapless although it is insulating. Contrary to the commonly accepted theory of this state in two dimensions, we show that a vanishing gap does not necessarily imply nonzero compressibility by using quantum Monte Carlo simulations of the Bose-Hubbard model and a percolation theory. Next I will talk about the existence and stability of the pair supersolid phase in an extended Bose-Hubbard model on the triangular lattice. Such a system can be realized experimentally for dipolar bosons polarized by an external electric field and confined in the optical lattice.

About the Speaker

郭文安, 1990年毕业于兰州大学, 1996年在北京师范大学获得博士学位。于1997-1998年在荷兰Delft理工大学从事博士后研究, 后任教于北京师范大学。2004年任北京师范大学物理系教授。主要研究方向是统计物理, 经典与量子模型相变与临界现象的数值研究。