北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Weekly Seminar

Emergent opportunities in two-dimensional material research

Prof. Yuanbo Zhang

Fudan University

Time: 4:00pm, Nov. 29, 2017 (Wednesday)

时间：2017年11月29日 （周三）下午4:00

Venue: Room W563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

Two-dimensional (2D) atomic crystals, best exemplified by graphene, have emerged as a new class of material that may impact future science and technology. From a material physicist's point of view, 2D materials provides vast opportunities on two fronts: First, the reduced dimensionality in these 2D crystals often leads to novel material properties that are different from those in the bulk; Second, the entire 2D crystal is a surface, so it is possible to have better control of their material properties with external perturbations. In this talk I will illustrate these two points with two examples: black phosphorus and 1T-TaS_2. These two layered materials have vastly different properties. Black phosphorus is a 2D semiconductor, and its superior material quality has recently enabled us to observe the quantum Hall effect. 1T-TaS_2, on the other hand, is a metal with a rich set of charge density wave phases. We explore their electronic properties while the doping and dimensionality of the 2D systems are modulated.

About the speaker

Prof. Yuanbo Zhang received his BS from Peking University in 2000 and his PhD in Physics from Columbia University in 2006. He was a Miller Research Fellow at the University of California at Berkeley from Sept. 2006 to Jun. 2009, a postdoc research associate at IBM Almaden Research Center from Mar. 2010 to Sept. 2010, and a professor of Fudan University from 2011. His main research interests are: Electronic transport in low-dimensional systems including graphene; Scanning probe techniques and their application in studying low-dimensional nanostructures. Major honors include: Charles Townes Fellowship, Columbia University (2005); Miller Fellow, University of California, Berkeley (2006); IUPAP Young Scientist Prize, International Union of Pure and Applied Physics (2010); Nishina Asia Award, Nishina Memorial Foundation, Japan (2014).