Weekly Seminar

Novel physics emergent from few-layer MoS_2

Shiwei Wu

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Time: 4:00pm, Dec. 10, 2014 (Wednesday)

时间：2014年12月10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

Molybendum disulphide along with other transition metal dichalcogenides has emerged as another star in the family of atomically thin two dimensional materials. Different from its bulk counterpart, few-layer MoS_2 has appreciable variations in the electronic band structures, and evolves into a direct bandgap semiconductor when it is thinned down to a monolayer form. Furthermore, few-layer MoS_2 exhibits oscillatory structural symmetry with odd layer having inversion symmetry broken and even layer recovering its inversion symmetry. Combined with the reduced dimensionality, these fundamental characteristics have enabled many intriguing and novel physics, including exciton physics and valley physics. In this talk, I will present some of our recent findings in this material by using nonlinear optical microscopy and spectroscopy. The rapid progress in this area has also called for the development of optics-combined scanning tunnelling microscopy with simultaneously high spatial, spectral and temporal resolution, which I will describe at the end of the talk.

About the Speaker

Shiwei Wu is currently a professor in the department of physics at Fudan University. He got his bachelor degree from Fudan University in 2001, and his PhD degree from University of California Irvine in 2007. Before joining the faculty of physics at Fudan in 2011, he did his postdoctoral research at Molecular Foundry at Lawrence Berkeley National Laboratory. His research interest focuses on developing and applying state-of-the-art scanning probe and optical techniques to obtain microscopic understanding of important problems in condensed matter physics and surface science. Recently, his research group is working actively in the field of atomically thin two dimensional materials including graphene and transition metal dichalcogenides.