



Weekly Seminar

Optical properties of 2D transition metal dichalcogenides

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Time: 4:00pm, Dec. 3, 2014 (Wednesday)

时间: 2014年12月3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

The ultimate goal of making electronic devices with atomically thin layers stimulates the research in layered materials, in particular the Group VI transition metal dichalcogenides (TMDCs). The atomically thin TMD crystals emerge as a family of intrinsic 2 dimensional (2D) semiconductors and come across a transition from indirect gap materials at the bulk form to direct band gap semiconductors at the monolayer limit. Monolayer TMDCs are ideal quasi-two-dimensional semiconductors with a sizeable bandgap in the visible and near infrared range, satisfying the fundamental requirements for ultimate electronics and optoelectronics. In addition, the characteristic inversion symmetry breaking presented in monolayer TMDs leads to non-zero but contrasting but non-zero Berry curvatures and opposite orbit magnetic moments at K/K' valleys located at the six corners of the first Brillouin zone. These features provide the opportunity to manipulate electrons' additional internal degrees of freedom, namely the valley degree of freedom, making monolayer TMDCs a promising candidate for the conceptual valleytronics. In this talk, I'll introduce our progress in the optical study of 2D TMDCs.

About the Speaker

September 1992 – July 1997, B.Sc., University of Science and Technology of China

September 1997 – December 2001, Ph.D., Arizona State University

Jan 2002 - Sept 2004, Postdoctoral scientist, Columbia University & T.J. Watson research center, IBM

November 2004 – present, Assistant professor/Associate Professor/Professor, Department of Physics, University of Hong Kong