北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Seminar

Low dimensional hybrids and their novel gate-tunable quantum properties

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Time: 4:00Pm, Sep. 12, 2018 (Wednesday)

时间：2018年09月12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

Electrostatic gate tuning of quantum properties has been the key of mesoscopic physics. Especially, when the thickness of a system become negligible (i.e., the 2D limit), Coulomb screening is strongly suppressed and thus gate tuning can directly affect/shift its Fermi level, leading to a tremendous variety of emerging phenomena.

In this talk, we will first go through our previous works on quantum properties of the 2D materials/h-Boron-Nitride nano-hybrid systems.[1-2] Our recent studies on the electro-static gate tuning of an intrinsic ferromagnetic semiconductor in the 2D limit will also be discussed.[3] We expect that artificial nano-hybrids and their quantum properties can be expanded into many research areas that are important for both fundamental studies and future applications.

[1] S. Chen, Z. Han (equal contributor), *et al.*, **Science**, **353,** 1522 (2016).
[2] X. X. Li, …, Z. Han*, *et al.*, **Nature Communications**, **8**, 970 (2017).
[3] Z. Wang, …, Z. Han*, *et al.*, **Nature Nanotechnology, 13**, 554 (2018)..

About the speaker

Zheng Vitto Han got his PhD in nanoelectronics at Néel Institute, and is now a research professor at the Institute of Metal Research, CAS in Shenyang, China. Dr. Han has been utilizing nanoFab together with artificial staking methods to study the interfacial coupling of low-dimensional materials such as graphene and superconducting nano-dot arrays, MoS_2, and two-dimensional magnetic semiconductors, etc. He has revealed a series of exotic physical properties of such systems, with the related works published in Science, Nature Physics, Nature Nanotechnology and other journals.