



Weekly Seminar

The mystery of high temperature superconductivity at the FeSe/STO interface

封东来

复旦大学物理系

Time: 4:00pm, Sep. 21, 2016 (Wednesday)

时间: 2016年9月21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

Interface and surface become important playgrounds for unconventional superconductivity, since they bring broken symmetry, competing orders, charge transfer, strain and other factors into the problem. Recently, interfacial superconductivity up to 75K has been discovered in FeSe/STO and FeSe/BTO interfaces [1,2]. In this talk, I will demonstrate that the combination of angle resolved photoemission spectroscopy (ARPES), scanning tunneling microscopy (STM) and molecular beam epitaxy (MBE) is a powerful tool to study the superconductivity at interfaces and surfaces. Specifically, I will present: our recent efforts in the understanding of the pairing symmetry of FeSe/STO [3] and the anomalous phase diagram of FeSe films upon surface electron doping [4,5]. Our results suggest that the interfacial effects, particularly interfacial electron-phonon interactions, may play a critical role in the high- T_c of FeSe/STO. In line with it, I will introduce our latest findings of the surprising interfacial structure of FeSe/STO.

[1] S. Tan et al., Nature Materials 12, 634 (2013).

[2] R. Peng et al., Nature Comm. 5, 5044 (2014).

[3] Q. Fan et al., Nature Physics 11, 946–952 (2015).

[4] C.-H.-P. Wen et al., Nature Comm. 7, 10840 (2016).

[5] W. H. Zhang et al., Nano Lett. 16 (3), 1969–1973 (2016).

About the speaker

封东来, 复旦大学物理系教授, 应用表面物理国家重点实验室主任。兼任《中国物理快报》副主编, 《Physical Review Letters》division associate editor等。封东来从事凝聚态物理中复杂量子材料及其微结构的实验研究, 发表论文130余篇, 共被引6900余次, 应邀在国际学术会议做报告70余次。曾获杰青, 海外华人物理学会亚洲成就奖, 中国物理学会“叶企孙”奖, 国家自然科学基金二等奖等。