清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学术报告
Physics Seminars (biweekly)

Title: **Enhanced superconductivity in one-unit-cell FeSe film grown on SrTiO3**

Speaker: **Xucun Ma**
(***Department of Physics, Tsinghua University***)

Time: **3:15pm, Wednesday, June 4, 2014**
(2:45~3:15pm, Tea, Coffee, and Cookie)

Venue: **Conference Hall 322, Science Building, Tsinghua University**

Abstract

Searching for superconducting materials with high transition temperature (TC) is one of the most exciting and challenging fields in physics and materials science. By using MBE technique, we are able to prepare stoichiometric and superconducting FeSe single crystalline films on various substrates, which enables us investigate superconductivity mechanism of FeSe thin films in well-controlled way. Most importantly, by using low temperature scanning tunneling spectroscopy, a superconductive gap as large as 20 meV and the vortex state under high magnetic field are revealed in the single unit-cell thick FeSe films on SrTiO3(001) substrate. Such a high Tc superconductor is further confirmed by recent transport measurement. The study not only demonstrates a powerful way for finding new superconductors and for raising TC, but also provides a well-defined platform for systematic study of the mechanism of unconventional superconductivity by using different superconducting materials and substrates.