



Seminar

Photoemission Studies on Topological Matter.



Su-Yang Xu

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Time: 10:30 am, Dec.27, 2013 (Friday)

时间: 2013年12月27日 (周五) 上午 10:30

Venue: Conference Room A (607), No. 5 Science Building

地点: 理科五号楼607会议室

Abstract

In this talk, I will describe our spin-resolved and angle-resolved photoemission spectroscopy (ARPES and spin-resolved ARPES) works on various topological systems. First, I will summarize our recent works on the Z_2 (time-reversal protected) topological insulators. In the second part, I will focus on our experimental identification of new topological phases of matters, including the topological crystalline insulator phase in the $Pb_{1-x}Sn_xTe$, the topological Kondo insulator phase in SmB_6 , as well as the 3D Dirac semimetal phase in Cd_3As_2 and Na_3Bi .

References:

1. Su-Yang Xu, *et al.*, Topological Phase Transition and Texture Inversion in a Tunable Topological Insulator. *Science* **332**, 560 (2011).
2. Su-Yang Xu, *et al.*, Hedgehog spin texture and Berry's phase tuning in a magnetic topological insulator. *Nature Phys.* **8**, 616 (2012).
3. Su-Yang Xu, *et al.*, Observation of a topological crystalline insulator phase and topological phase transition in $Pb_{1-x}Sn_xTe$. *Nature Comm.* **3**, 1192 (2012).
5. L. A. Wray, Su-Yang Xu, *et al.*, Observation of topological order in a superconducting doped topological insulator. *Nature Phys.* **6**, 855 (2010).
6. L. A. Wray, Su-Yang Xu, *et al.*, A topological insulator surface under strong Coulomb, magnetic and disorder perturbations. *Nature Phys.* **7**, 32 (2011).
7. M. Neupane, N. Alidoust, Su-Yang Xu, *et al.*, Surface electronic structure of a topological Kondo insulator candidate SmB_6 : insights from high-resolution ARPES. Preprint at arXiv:1306.4634 (2013).
8. M. Neupane*, Su-Yang Xu*, *et al.*, Observation of a topological 3D Dirac semimetal phase in high-mobility Cd_3As_2 . Preprint at <http://arXiv:1309.7892> (2013).

About the Speaker

SU-YANG XU got his Bachelor degree from Peking University in 2008. Since then, he has been pursuing his Ph.D. of Physics in Princeton University. His research interests are:

- Topologically ordered matter in 2D and 3D. E.g. Quantum Hall effect system, topological insulators, topological superconductors.
- Graphene, exotic 2D quantum materials, quantum (nanoscale) transport and optical properties.
- Strongly correlated electron system: High temperature superconductors, frustrated magnets.
- State of art storage-ring synchrotrons experimental approaches in fundamental physics.