



### Weekly Seminar

## One-dimensional edge modes of three-dimensional topological insulators

**Prof. Titus Neupert**

*Department of Physics, University of Zurich*



**Time: 4:00pm, April. 19, 2017 (Wednesday)**

**时间: 2017年4月19日 (周三) 下午4:00**

**Venue: w563, Physics building, Peking University**

**地点: 北京大学物理楼, 西563会议室**

#### Abstract

I will discuss two instances of one-dimensional conducting edge channels that can appear on the boundary of three-dimensional topological crystalline insulators, one supported by an experimental observation and the second one being a theoretical prediction. For the first part, I will discuss channels that appear at step edges on the surface of (Pb,Sn)Se. These conducting channels can be understood as arising from a Berry curvature mismatch between Dirac surface states on either side of the step edge. Experimentally, they have been found to be remarkably robust against defects, magnetic fields and elevated temperature. Second, I will introduce the concept of higher-order three-dimensional topological insulators, which have gapped surfaces, but support topologically protected gapless states on their one-dimensional physical edges.

#### About the Speaker

Titus Neupert obtained his diploma in physics at Dresden University of Technology, Germany in 2007. He received Master degree of physics from University of Zurich, Switzerland in 2009, and got Ph.D. degree at ETH Zurich, Switzerland in 2013. From 2013 to 2016, he had his postdoctoral fellowship in Princeton Center for Theoretical Science, Princeton University, USA. Since Jun 2016, he has been working in Department of Physics, University of Zurich, Switzerland as an assistant Professor with tenure track.