



# 清华大学高等研究院

Institute for Advanced Study, Tsinghua University

## 学术报告

- Title:** Five dimensional generalization of the topological Weyl semimetal
- Speaker:** Biao Lian ( *Stanford University* )
- Time:** 3:30pm, Tuesday, 2016-08-30
- Venue:** Conference Hall 322, Science Building, Tsinghua University

### Abstract

We generalize the concept of three-dimensional topological Weyl semimetal to a class of five dimensional (5D) gapless solids, where Weyl points are generalized to Weyl surfaces which are two-dimensional closed manifolds in the momentum space. Each Weyl surface is characterized by a  $U(1)$  second Chern number  $C_2$  defined on a four-dimensional manifold enclosing the Weyl surface, which is equal to its topological linking number with other Weyl surfaces in 5D. In analogy to the Weyl semimetals, the surface states of the 5D metal take the form of topologically protected Weyl fermion arcs, which connect the projections of the bulk Weyl surfaces. The further generalization of topological metal in  $2n+1$  dimensions carrying the  $n$ -th Chern number  $C_n$  is also discussed.