

Seminar

Topological Fermi-Arcs and bulk boundary correspondence in the Weyl Semimetal

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Existence of unique boundary states is the characteristic feature of a topological material. Surface Fermi-arcs are the manifestation of such boundary states that connect pairs of surface projections of bulk Weyl nodes in a Weyl semimetal. The relation between surface “Fermi-arcs” and bulk Weyl nodes, uniquely allows to study the notion of bulk to surface correspondence. We visualize these topological Fermi arc states on the surface of the Weyl semimetal tantalum arsenide using scanning tunneling spectroscopy [1]. We further identify a sharp distinction between the wave function’s spatial distributions of topological versus trivial bands. The novel analysis technique we demonstrate, based on the structure of the Bloch wave function within the unit cell, is applicable to other electronic systems of interest such as high temperature superconductors and topological crystalline insulators.

Reference:

1. R. Batabyal et. al. *Science Advances* 2, e1600709 (2016).

Thursday, Nov 1st 2018

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H