北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Weekly Seminar

Weyl semimetals on the atomic scale

Haim Beidenkopf

Department of Condensed Matter, Weizmann Institute of Science

Time: 4: 00 pm, June. 5, 2019 (Wednesday)

时间：2019年6月5日 （周三）下午4:00

Venue: Room W563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

Weyl semimetals host pairs of bulk weyl bands with Dirac-like dispersion of opposite chirality. Their chiral degeneracy is lifted by a broken crystallographic or time reversal symmetry. Each pair of Weyl nodes acts as source and drain monopoles of quantized Berry flux in momentum space. This induces corresponding Fermi arc surface bands with open contour dispersion connecting the surface projection of the pair of bulk Weyl nodes. We show the existence of the topological surface Fermi arc bands in both inversion and time reversal symmetry broken Weyl materials and investigate them on the atomic scale using scanning tunneling spectroscopy. In TaAs we find that the Bloch band structure of Fermi arc states distinguishes them from trivial surface states. In Co_3Sn_2S_2 we find distinct inter Weyl node connectivity on three different crystallographic terminations. Our findings demonstrate both the unique aspects of Fermi arc states as well as the topologically unprotected aspects of those exotic surface bands.

About the speaker

ACADEMICS

2005-2009	Ph.D. in physics, Department of Condensed Matter, Weizmann Institute.
2004-2005	M.Sc. in physics, Department of Condensed Matter, Weizmann Institute.
2001-2003	B.Sc. in physics and computer science, Tel-Aviv University.

POSITIONS

2012-current	Senior Scientist, Department of Condensed Matter, Weizmann Institute of Science.
2009-2012	Post-doctorate in physics, Department of Condensed Matter, Princeton University.

AWARDS AND FELLOWSHIPS:

2018	Levinson prize for young researcher by the scientific council of the Weizmann Institute of Science
2016	Prize for young researcher by the Israeli Physics Sosciety
2016	ARCHES Award for Research Cooperation and High Excellence in Science, Minerva Stiftung.