

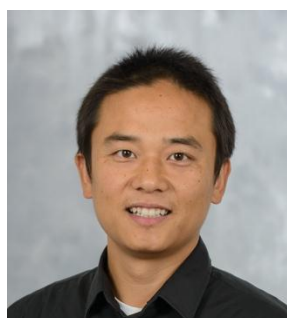


Seminar

Anomalous charge and heat transport in topological semimetals

Binghai Yan

Weizmann Institute of Science, Israel



Time: 4: 00 pm, June. 7, 2019 (Friday)

时间: 2019年6月7日 (周五) 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

Topological Weyl semimetals provide fascinating platforms to examine exotic transport phenomena such as the chiral anomaly and the anomalous Hall effect. In the ordinary (longitudinal) transport, the Wiedemann-Franz law links the ratio of electronic charge and heat conductivity to a fundamental constant. It has been tested in numerous solids, but the extent of its relevance to the anomalous (transverse) transport remains an open question. I will introduce recently-discovered magnetic Weyl materials Mn₃Sn and Mn₃Ge. Their noncollinear chiral spin structure induces huge anomalous Hall effect and thermal Hall effect in a Kagome-type lattice. In collaboration with experiment, we reveal a finite temperature violation of the Wiedemann-Franz correlation. This violation is caused by the Berry curvature distribution, rather than the inelastic scattering as observed in ordinary metals.

About the speaker

Binghai Yan is an assistant professor in the department of condensed matter physics at the Weizmann Institute of Science, Israel. After completing his PhD at Tsinghua University in 2008, he worked as a postdoc at Bremen University and later at Stanford University. He was a group leader in the Max Planck Institute for Chemical Physics during 2012-2016 and started his current position at Weizmann Institute since 2017. He was awarded the ARCHES Prize in Germany in 2013, and the Israel Physical Society Prize for Young Scientist in 2017. He is a theoretical physicist and currently interested in solid-state materials that exhibit topological properties.