

Special Seminar

Berry curvature dipole in Weyl semimetal materials



Binghai Yan

Maurice and Gabriela Goldschleger Center For Nanophysics

Time: 2:00pm, October 26, 2017 (Thursday)

时间: 2017年10月26日 (周四) 下午2:00

Venue: W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

In the band structure of a Weyl semimetal (WSM), the conduction and valence bands cross each linearly through Weyl points that are usually treated as “monopoles” of the Berry curvature. As a second-order response, WSMs were very recently demonstrated to show strong nonlinear optical effects including an exotic nonlinear Hall effect. This is caused by the non-equilibrium distribution of the Berry curvature, described as the “dipole” of the Berry curvature. In this talk, I will talk about our recent results on nonlinear response for representative WSM materials TaAs and MoTe₂.

About the Speaker

Binghai Yan is an assistant professor in Weizmann Institute of Science, Israel. He received B.S. in Xi'an Jiaotong University and Ph.D. in Physics, Institute for Advanced Study, Tsinghua University. He had worked at University of Bremen, Germany (2008-2010, 2011-2012), Stanford University, US (2010-2011), and MPI for Chemical Physics of Solids and Physics of Complex Systems, Germany (2012-2017) before joining Weizmann Institute of Science, Israel in 2017. Binghai Yan has been working on anticipating and interpreting interesting properties of real materials, such as the surface Fermi arcs, anomalous Hall effect, spin Hall effect and optical properties, by performing *ab initio* materials simulations. Using the *ab initio* computational methods based on the density-functional theory, he also aims to design materials for required physical properties. His recent interest is on the design and prediction of exotic topological materials, for example, topological insulators and topological Dirac / Weyl semimetals.