中国科学院
固体物理研究所

学术报告(6.2 下午 3:00)

题目：**Quantum Magnetoconductivity of Topological Semimetals in High Magnetic Fields**

报告人：**Shun-Qing Shen**, Department of Physics, The University of Hong Kong

主持人：**Prof. Liangjian Zou**

时间：June 2（Tuesday）15:00

地点：Room 520, New Building

摘要：Weyl semimetals are three-dimensional topological states of matter, in a sense that they host paired monopole and anti-monopole of Berry curvature in momentum space, leading to the chiral anomaly. Here, we study the quantum magnetoconductivity of Weyl and Dirac semimetals in the diffusive regime. In the presence of a strong magnetic field along the direction connecting two Weyl nodes, it is found that the conductivity along the field is determined by the Fermi velocity. The conductivity is independent of the magnetic field in the undoped case that the Fermi level crosses the Weyl nodes. The magnetoconductivity is negative in the electron-doped regime while it is positive in the hole-doped regime. Meanwhile the conductivity normal to the field is negligibly weak, and its magnetoconductivity is positive. The high anisotropy of the magnetoconductivity is attributed to the chiral anomaly in the transport of Weyl semimetals. The magnetoconductivity of Dirac semimetals is always negative in strong fields.

报告人简历：

沈顺清教授在复旦大学理论物理专业取得本科、硕士和博士学位，1992-1995 在中国高等科学技术中心做博士后，1995-1997 年马普复杂物理系统研究所作为研究员，1997 年在日本东京工业大学作为研究员。1997 年 12 月至今他一直在香港大学物理系工作。沈顺清教授在强关联电子体系和凝聚态体系的拓扑性等方面领域做出了非常大的贡献，比如：他预言了拓扑安德森绝缘体、自旋横向力、共振自旋霍尔效应以及证明了巡游电子系统反铁磁长程序和非对角长程序的存在性。2010 年被授予香港的裘槎优秀科研者奖。2012 年为斯普林格出版社固体科学系列丛书写的《Topological Insulators》是目前拓扑绝缘体方面的第一本专著。

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