

凝聚态物理-北京大学论坛

北京大学物理学院凝聚态物理与材料物理研究所
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Magnetic Topological Semimetals with Kagome Lattices

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时间: 11月5日 (星期四) 15:00—16:30

地点: 北京大学物理大楼西楼202会议室

摘要 (Abstract): The origin of anomalous Hall effect (AHE) in magnetic materials is one of the most intriguing aspect in condensed matter physics and has been a controversial for a long time. Recent studies indicate that the intrinsic AHE is closely related to the Berry curvature of occupied electronic states. In a magnetic Weyl semimetal with broken time-reversal symmetry, there are significant contributions to Berry curvature around Weyl nodes, which would lead to a large intrinsic AHE. In addition, the real-space non-coplanar spin texture can also lead to significant AHE, so called topological Hall effect (THE). On the other hand, the kagome lattice is known to host exotic quantum magnetic states. Theoretical work has predicted that kagome lattices may also host topological electronic states. In this presentation, we introduce several kinds of materials, such as Fe_3Sn_2 , $\text{Co}_3\text{Sn}_2\text{S}_2$ and YMn_6Sn_6 with Kagome lattice, which show large AHE and THE, and it can be ascribed to the existence of Weyl or Dirac fermions in these systems as well as the real-space spin texture. It indicates that magnetic kagome metals provide a new platform to study on the emergent topological electronic properties in a correlated electron system.

报告人简介 (Aboutspeaker): 雷和畅, 2009年毕业于中国科学院合肥物质科学研究院固体物理研究所, 获得凝聚态物理学博士学位。2009-2012年, 在美国布鲁克海文国家实验室Cedomir Petrovic研究组开展博士后研究。2012年-2014年, 在日本东京工业大学Hideo Hosono研究组继续从事博士后研究。2014年底回国, 在中国人民大学物理系任职, 主要从事实验凝聚态物理研究, 包括拓扑量子材料、新型超导材料和低维磁性材料的探索制备、晶体生长和物性研究等。目前, 在《Nature》、《Nat. Phys.》、《Nat. Commun.》、《Phys. Rev. Lett.》、《Phys. Rev. X》、《J. Am. Chem. Soc.》等期刊上发表研究论文170余篇, 至今这些论文被引3300多次。2018年获得基金委优秀青年基金项目资助。

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<http://www.phy.pku.edu.cn/xshd/xsbg1/njt1.htm>