



Weekly Seminar

Skyrmion Topological Spintronics

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Time: 4:00pm, March 29, 2017 (Wednesday)

时间: 2017年3月29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

Symmetry breaking together with the strong spin-orbit interaction give rise to many exciting opportunities to the condensed matter physics community. Topologically protected magnetic skyrmions are one of the examples. In this talk, I will first present our recent progress in electric creation and manipulation of magnetic skyrmion at room temperature in a common material system - heterostructures with an interfacial broken inversion symmetry. This is triggered by the inhomogeneous current induced spin-orbit torque in a Ta/CoFeB/TaO_x trilayer. Secondly, I will demonstrate experimentally a spin topology driven dynamics of magnetic skyrmion - the skyrmion Hall effect - that is the accumulation of skyrmions at one side of the device. Thirdly, strategy towards sub-50 nanometer skyrmions at room temperature in the absence of magnetic field will be discussed. In the end, some open questions and future focus points will be addressed.

About the speaker

江万军, 清华大学物理系助理教授。2005年毕业于兰州大学物理学院获得微电子学专业。2010年在加拿大曼尼托巴大学物理系获得凝聚态物理学博士学位。之后在加州大学洛杉矶分校电子工程系以及阿贡国家实验室从事博士后研究工作。研究兴趣包括自旋相关成像技术, 表面与界面磁学, 以及基于斯格明子的拓扑自旋电子学。以第一作者发表论著包括Science (1篇), Nature Physics (1篇), PRL (2篇), PRB (10篇)。共发表论文50余篇, 引用1800余次。他获得过加拿大总督科学金奖, 加州大学洛杉矶分校校长奖, 于2016年入选中组部青年千人计划。