Seminar

Coherent spin transport in magnetic insulators

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Venue: Room w563, Physics building, Peking University

地点：北京大学物理楼，西563会议室

Abstract

Magnons, the quanta of spin waves, are collective spin excitations in magnetic materials and can transfer spin information free of charge transport, providing a promising route towards next-generation low-power spintronic devices. In this talk, I will first introduce the observation of strong magnon-magnon coupling in magnetic hybrid nanostructures with a large anti-crossing gap. Based on this effect, we experimentally excite exchange spin waves with short wavelengths down to 50 nm, and detect their long-distance and unidirectional propagation. Furthermore, we demonstrate the control of spin currents in a canted antiferromagnet by magnon interference. The inverse spin-Hall voltage changes sign as the frequency is tuned, evincing a frequency-controlled switching of the magnon handedness. Finally, I will present our recent work on the observation of chiral spin frustration with scanning nitrogen-vacancy magnetometry and its controllable switching via magnon spin torque.

About the speaker

于海明，北京航空航天大学 教授。2006年本科毕业于北京大学物理学院，2011年获瑞士洛桑联邦理工大学（EPFL）博士学位。2011-2014年在德国慕尼黑工业大学做博士后研究。2014年加入北京航空航天大学Fert北京研究院从事自旋电子学研究，现任北京航空航天大学集成电路科学与工程学院教授、博士生导师。2015年获批海外高层次青年人才计划，2025获批国家自然科学基金青年科学基金项目A类。近年来，在Nat. Phys./Nat. Mater./Nat. Nanotechnol.、Phys. Rev. Lett./Phys. Rev. X等期刊发表论文50余篇。主要从事自旋电子学和磁子学的实验研究。

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