



Weekly Seminar

Heat transport study of spin liquid candidates

Prof. Shiyan Li

Fudan University

Time: 4:00pm, Nov. 22, 2017 (Wednesday)

时间: 2017年11月22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

Ultralow-temperature thermal conductivity measurement is a bulk tool to probe the low-lying quasiparticles, even in an insulator. In this talk, I will present our heat transport studies of three highly debated compounds. The first one is the topological Kondo insulator SmB_6 . There have been hot debates on whether a bulk Fermi surface of charge-neutral excitations exists in it. The second one is YbMgGaO_4 with triangular lattice, which was recently argued to be a promising candidate for a quantum spin liquid. The last one is the Kitaev honeycomb magnet $\alpha\text{-RuCl}_3$. Although it shows a zigzag magnetic order in zero field, the exotic Kitaev spin liquid state may exist in high field when the magnetic order is suppressed. Our thermal conductivity results shed light on the ground states of these interesting compounds [1-4].

[1] Y. Xu, S. Cui, J. K. Dong, D. Zhao, T. Wu, X. H. Chen, K. Sun, H. Yao, and S. Y. Li*, *Physical Review Letters* 116, 246403 (2016).

[2] Y. Xu, J. Zhang, Y. S. Li, Y. J. Yu, X. C. Hong, Q. M. Zhang, and S. Y. Li*, *Physical Review Letters* 117, 267202 (2016).

[3] Z. Ma, J. H. Wang, Z. Y. Dong, J. Zhang, S. C. Li, S. H. Zheng, Y. J. Yu, W. Wang, L. Q. Che, K. J. Ran, S. Bao, Z. W. Cai, P. , A. Schneidewind, S. Yano, J. S. Gardner, X. Lu, S. L. Yu*, J. M. Liu, S. Y. Li*, J. X. Li*, J. S. Wen*, arXiv:1709.00256.

[4] Y. J. Yu, Y. Xu, K. J. Ran, J. M. Ni, Y. Y. Huang, J. S. Wen*, S. Y. Li*, arXiv:1708.04090.

About the speaker

Prof. Shiyan Li got his B.S. in 1997 and Ph. D in 2002 under the supervision of Prof. Xianhui Chen in USTC. Then he did postdoc research for four and half years in Prof. Louis Taillefer's group in University of Toronto/University of Sherbrooke, Canada. In 2007, he came back to join the Department of Physics in Fudan University. In 2010, he was appointed "Eastern Scholar" at Shanghai Institutions of Higher Learning. In 2012, he