MAR17-2016-020340

Abstract for an Invited Paper
for the MAR17 Meeting of
the American Physical Society

Fractionalized Excitations in higher dimensional Iridates[1]

PETER LEMMENS, Inst. Condensed Matter Physics, TU Braunschweig, Germany and Lab. for Emerging Nanometrology (LENA), TU Braunschweig, Germany

Fractionalization of elementary excitations remains an excotic phenomenon usually limited to 1D and 2D systems. Here we report spectroscopic signatures of fractional excitations in the 3D harmonic-honeycomb iridates beta - and gamma-Li_2IrO_3 [1]. Our experimental evidence is based on Raman spectroscopic investigations of the polarization and temperature dependence of a scattering continuum, a comparison with earlier investigations of alpha-$RuCl_3$ [2], and a comparison with theoretical modelling of the Kitatev model on different topologies [3]. [1] A. Glamazda, P. Lemmens, S.-H. Do, K.-Y. Choi, Nature Commun. 7, 12286 (2016). [2] L. J. Sandilands, Y. Tian, K. W. Plumb, Y. -J. Kim, and K. S. Burch, PRL 114, 147201 (2015). [3] J. Knolle, G.-W. Chern, D. L. Kovrizhin, R. Moessner, and N. B. Perkins, PRL 113, 187201 (2014). B. Perreault, J. Knolle, N. B. Perkins, and F. J. Burnell, PRB 92, 094439 (2015).

[1]Support by KRF 2009-0076079, GIF 1171-486 189.14/2011, NTH-CiN, and DFG-RTG 1952/1.