Abstract Template

Strain modulation of magnons and paramagnons in ruthenates

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We will present Raman Scattering and Resonant Inelastic X-ray Scattering (RIXS) data on the magnetic ground state as well as antiferromagnetic magnon and paramagnon excitations in 4d- and 5d-electron compounds under uniaxial strain. In spin-orbit Mott insulators including Ca_2RuO_4 and Sr_2IrO_4, we have discovered strain-induced magnetic phase transitions and strain-modulated magnon anomalies, which offer perspectives for THz magnonics. [1,2] In metallic Sr_2RuO_4, we have observed a large strain-induced softening of paramagnons, with possible implications for unconventional superconductivity. [3,4]

1. Hun-Ho Kim, Kentaro Ueda, Suguru Nakata, Peter Wochner, Andrew Mackenzie, Clifford Hicks, Giniyat Khaliullin, Huimei Liu, Bernhard Keimer, Matteo Minola, Nature Communications 13, 6674 (2022).

2. Lichen Wang, Huimei Liu et al., to be published.

3. H. Suzuki, L. Wang, J. Bertinshaw, H. U. R. Strand, S. Käser, M. Krautloher, Z. Yang, N. Wentzell, O. Parcollet, F. Jerzembeck, N. Kikugawa, A. P. Mackenzie, A. Georges, P. Hansmann, H. Gretarsson, B. Keimer, Nature Communications,14 7042 (2023)

4. Lichen Wang et al., to be published.