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Triangular lattice antiferromagnet FeGa2S4

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Frustrated triangular lattice antiferromagnets show a variety of exotic properties. Experimental observations in NiGa2S4 S=1 system [1] suggest i) presence of quadrupolar correlations [2] in addition to the moderate nearest-neighbor (J1) and strong third-neartest-neighbor (J3) Heisenberg interactions and ii) a topological transition driven by the Z2-vortex binding-unbinding [3].

We study the sister compound FeGa2S4 S=2 [4] by means of neutron scattering. Our aim is to establish the dominant terms in the spin Hamiltonian and to exploit the possibility of multi-k formation.

[1] C. Stock et al. PRL 105,037402(2010)

[2] E.M. Stoudenmire et al. PRB 79,214436(2009)

[3] T. OPkubo, H. Kawamura J.Phys.Soc.Jpn 79,084706(2010)

[4] S. Nakatsuji et al. PRL 99,157203(2007)

Position

Scientist

Primary author: ZAHARKO, Oksana (PSI - Paul Scherrer Institut)

Co-author: KAUR, Guratinder (PhD student)

Presenter: ZAHARKO, Oksana (PSI - Paul Scherrer Institut)

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