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Anti-chiral order and damped spin waves in the topological semi-metal Mn3Ge

Monday 3 June 2019 14:00 (30 minutes)

The recent discovery of Anomalous Hall Effect in Mn3X (X=Sn,Ge) suggests the existence of Weyl nodes in the electronic band structure of these non-collinear antiferromagnets [1]. The resulting coupling of electronic transport and magnetism in Mn3X presents important technological opportunities. The magnetic properties of Mn3X are crucial to Weyl physics and to its implementation in devices but are still under debate due to the lack of experimental studies. In this talk, I will present polarized neutron diffraction and inelastic neutron scattering measurements performed on Mn3Ge to gain insight into its magnetism. I will show Mn3Ge has an anti-chiral spin structure with a peculiar field dependence. I will also propose a spin Hamiltonian for this material that can explain its magnetic ground state selection and can also parametrize it's spin wave excitations. [1] Nakatsuji S. et al., Nature 527.7577 (2015).

Author: GAUDET, Jonathan

Presenter: GAUDET, Jonathan

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