Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **540** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

Anisotropic magnetic interactions in hexagonal AB-stacked kagome lattice structures: Applications to Mn3X (X = Ge, Sn, Ga) compounds

Tuesday 8 June 2021 15:15 (15 minutes)

Mn_3X compounds in which the magnetic Mn atoms form AB-stacked kagome lattices have received a tremendous amount of attention since the observation of the anomalous Hall effect in Mn_3Ge and Mn_3Sn. Although the magnetic ground state has been known for some time to be an inverse triangular structure with an induced in-plane magnetic moment, there have been several controversies about the minimal magnetic Hamiltonian. We present a general symmetry-based model for these compounds that includes a previously unreported inter-plane Dzyaloshinskii-Moriya interaction, as well as anisotropic exchange interactions. The latter are shown to compete with the single-ion anisotropy which strongly affects the ground state configurations and elementary spin-wave excitations. Finally, we present the calculated elastic and inelastic neutron scattering intensities and point to experimental assessment of the types of magnetic anisotropy in these compounds that may be important.

Author: ZELENSKIY, Andrey (Dalhousie University)

Co-authors: Dr MONCHESKY, Theodore (Dalhousie University); Dr PLUMER, Martin (Memorial University of Newfoundland); Dr SOUTHERN, Byron (University of Manitoba)

Presenter: ZELENSKIY, Andrey (Dalhousie University)

Session Classification: TS-8 Magnetic North VII / Nord magnétique VII

Track Classification: Magnetic North/Magnétisme Nord