

Abstract Submitted  
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**Anisotropic Non-Spin Wave Magnetic Excitations in FeGe<sub>2</sub>**<sup>1</sup>

CARL ADAMS, St Francis Xavier Univ, MATTHEW STONE, STUART CALDER, DOUGLAS ABERNATHY, Oak Ridge National Laboratory — Inelastic neutron scattering measurements on a single crystal sample of FeGe<sub>2</sub> were performed. FeGe<sub>2</sub> is a metallic antiferromagnet with a tetragonal crystal structure. It has been known for sometime that the excitations along the tetragonal c-axis extend over a broad range of energies with an effective exchange constant that is 15 times greater in magnitude than the exchange constant in the basal plane. Despite this unusual feature the observed excitations could be described using a classical Heisenberg Hamiltonian. Our recent measurements using both time-of-flight and reactor based inelastic scattering reveal magnetic excitations that are again highly anisotropic, but in this case the anisotropy is evident in the basal plane. The excitations are quite intense, broadly dispersive, and along the (110) directions. Neither the anisotropy nor the excitations themselves can be described in the context of a spin-wave model. We suspect that these excitations are related to a Fermi surface effect.

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