Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

**Evolution of spin wave excitations with Co-doping in the spinel $MnV_2O_4$**[1] STEVEN HAHN, Neutron Data Analysis and Visualization Division, ORNL, JIE MA, Quantum Condensed Matter Division, ORNL, JUN HEE LEE, Materials Science and Technology Division, ORNL, TAO HONG, HUIBO CAO, ADAM ACZEL, Quantum Condensed Matter Division, ORNL, ZHILING DUN, Department of Physics and Astronomy, University of Tennessee, MATTHEW STONE, WEI TIAN, Quantum Condensed Matter Division, ORNL, YIMING QIU, NIST Center for Neutron Research and Department of Materials Science and Engineering, University of Maryland, JOHN COPLEY, NIST Center for Neutron Research, HAIDONG ZHOU, Department of Physics and Astronomy, University of Tennessee, RANDY FISHMAN, Materials Science and Technology Division, ORNL, MASAAKI MATSUDA, Quantum Condensed Matter Division, ORNL — Spin waves were measured at several levels of Co-doping in the spinel system $MnV_2O_4$ by inelastic neutron scattering and analyzed with first-principles-guided spin models. Co-doping creates a rich phase diagram encompassing the transition from localized- to itinerant-electron regimes. Increasing Co concentration weakens the single-ion anisotropy and increases both the magnitude and isotropy of the nearest-neighbor exchange interactions. First principles calculations emphasize the the distinctly different microscopic origins of the two-in-two-out magnetic structure at the Mn-rich and Co-rich limits.

[1]Research at HFIR and SNS, ORNL, were sponsored by the Scientific User Facilities Division and Materials Science and Engineering Division, Office of Basic Energy Sciences, US Department of Energy.

Steven Hahn
Neutron Data Analysis and Visualization Division, ORNL

Date submitted: 14 Nov 2014 Electronic form version 1.4