

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Detection of low energy spin loop excitations in rare earth kagomé systems MICHAEL HOCH, SANHITA GHOSH, SAITI DATTA, HAIDONG ZHOU, National High Magnetic Field Laboratory, FSU, CHRISTOPHER WIEBE, University of Winnipeg, Canada, STEPHEN HILL, Florida State University, NHMFL — Collective spin excitation spectra in frustrated antiferromagnets have been detected using high field electron magnetic resonance (EMR). At low temperatures the langasite kagomé systems $R_3Ga_5SiO_{14}$ ($R = Pr$ and Nd) exhibit short range spin correlation effects. Neutron scattering has shown that these systems do not exhibit long-range magnetic order at temperatures down to 30 mK. Field-sweep EMR measurements made on single crystals of $Pr_3Ga_5SiO_{14}$ and $Nd_3Ga_5SiO_{14}$ in the temperature range 1.3 - 20 K, and in fields up to 22 T, give a series of absorption peaks which are quite different to conventional EMR spectra. The resonances are interpreted using a model which involves spin-wave excitations in short range antiferromagnetically correlated spin loops or clusters.

Michael Hoch
National High Magnetic Field Laboratory, FSU

Date submitted: 25 Nov 2012

Electronic form version 1.4