Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Spectral Signature of Neodymium Dopants in Frustrated Gadolinium Gallium Garnet Lattice[1] CHRISTOPHER FERRI, MICHAEL TENNENBAUM, SAYANTANI GHOSH, University Of California, Merced, 95348, School Of Natural Sciences — We investigate the spectral emission of Nd3+ dopant ions (1% at. wt) in the frustrated magnet Gadolinium gallium Garnet (GGG) as a function of temperature and magnetic field. We concentrate on the low energy excitations centered at 1064 nm and 935 nm, which show a multiplet structure at room temperature. As temperature decreases the emission spectra demonstrate changes in relative intensities that undergo a cross-over at 122 K under zero field cooled conditions. This cross-over is magnetic field dependent and changes as we field-cool the sample. Typically, with decreasing temperature the line widths of the spectral peaks decrease, as is expected. However, when cooled below 10 K selective peaks start exhibiting broadening, even when zero-field cooled. We follow this line broadening as a function of magnetic field and dopant concentration and speculate it is a result of the dopant ions coupling to the internal magnetic fields of the host lattice.

[1]We acknowledge funding from NSF CAREER DMR-1056860.

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Date submitted: 10 Nov 2011 Electronic form version 1.4