Abstract Submitted
for the 4CS19 Meeting of
The American Physical Society

Single-Ion Anisotropy in Lattice-Disordered Quasi-1D Transverse Ising System $CoNb_2O_6$ JOHN RINGLER, COLIN SARKIS, MATT WILLIAMS, KATE ROSS, Colorado State University — Historically, the ability to probe the non-equilibrium properties of bulk quantum magnets has been largely stifled by the extremely short (picosecond) relaxation timescales displayed by these systems. In the well-known quasi-1D Transverse Field Ising system $CoNb_2O_6$, relaxation times have been observed to increase by several orders of magnitude at low temperatures and fields. This long relaxation time leaves the material – and its non-equilibrium phase diagram – open to previously inaccessible experimental techniques such as neutron scattering. The mechanisms of this slow magnetic relaxation remain unclear, but could be resolved by investigating the single-ion effects occurring at the magnetic Co^{2+} sites in the crystal lattice. To accomplish this, Co^{2+} doped into non-magnetic columbite $MgNb_2O_6$ in an effort investigate these effects through the diluted Ising chains. Powder samples of $Mg_{1-x}Co_xNb_2O_6$ (with x = 0.01, 0.05, 0.1, 0.2) were synthesized using a sintering technique, and single-ion anisotropic interactions were explored via electron paramagnetic resonance (EPR) and AC susceptibility measurements on the lattice-disordered variant.

John Ringler
Colorado State University

Date submitted: 13 Sep 2019 Electronic form version 1.4