Abstract Submitted
for the TSF16 Meeting of
The American Physical Society

Magnetic Susceptibility of $CoNb_2O_6$ TIMOTHY REEDER, KATE ROSS, Colorado State University — The exactly solvable transverse field Ising chain (TFIC) is the canonical model for the study of Quantum Phase Transitions (QPT). Despite the wealth of magnetic materials available, there are surprisingly few material examples of the TFIC. One well-known example is $CoNb_2O_6$, which behaves like the TFIC near its field-induced QPT: at low temperatures, a second order quantum phase transition exists near $H_c = 5.5$ T. Geometric frustration between the ferromagnetic Ising chains of cobalt introduces a propensity for defect formation between chains, and these may play a role in allowing the QPT to behave like the TFIC despite 3D magnetic order. In order to study the effect of domain wall defects near the QPT in $CoNb_2O_6$, we have synthesized a single crystal using the floating zone method. Here we report ac susceptibility measurements, which are sensitive to the free chains generated by domain walls in this frustrated system. These measurements will form the basis for our future study of non-equilibrium effects in $CoNb_2O_6$.

Timothy Reeder
Colorado State University

Date submitted: 17 Oct 2016 Electronic form version 1.4