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Investigation of the Magnetic Properties in the Pyrochlore $Pr_2Sn_2O_7$[1] ELIZABETH GREEN, T. HERRMANNSDÖRFER, R. SCHÖNEMANN, Z. WANG, M. UHLARZ, J. WOSNITZA, Hochfeld-Magnetlabor Dresden (HLD), Helmholtz-Zentrum Dresden-Rossendorf, Germany, H.D. ZHOU, Dept. of Physics & Astronomy, University of Tennessee, Knoxville TN, USA — Pyrochloric compounds are best known for their remarkable magnetic properties, particularly the possibility to generate magnetic monopoles excitations at low temperatures. Compared to the A^{3+} ions in the spin ice compounds $A_2Ti_2O_7$ (where A = Ho or Dy), the Pr^{3+} ions in $Pr_2Sn_2O_7$ have a smaller magnetic moment (2.6 μ_B/Pr [1]). This ultimately leads to quantum fluctuations that suppress the spins' ability to freeze [2]. AC susceptibility measurements were performed on a polycrystalline $Pr_2Sn_2O_7$ sample to probe its dynamic ground state for temperatures down to 11 mK. Preliminary results indicate a narrow distribution of relaxation rates which, as evidenced by neutron experiments [3], are governed by quantum tunneling between states. In addition, relaxation times extracted from isothermal frequency sweeps were found, within error, to be temperature independent below 1 K. Future measurements include specific heat from which the field-dependence of the magnetic monopole densities may be extracted.

[1] K. Matsuhira et al., J. Phys. Soc. Jpn. **71**, 1576 (2002)
[2] S. Onoda et al., PRL **105**, 047201 (2010)
[3] H.D. Zhou et al., PRL **101**, 227204 (2008)

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