

Abstract Submitted  
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**Thermodynamic tuning in the dilute Ising magnet  $\text{LiHo}_{0.045}\text{Y}_{0.955}\text{F}_4$**  D.M. SILEVITCH, M.A. SCHMIDT, University of Chicago, G. AEPPLI, University College London, T.F. ROSENBAUM, University of Chicago — The  $\text{LiHo}_x\text{Y}_{1-x}\text{F}_4$  family of dipole-coupled Ising magnets has been found to exhibit a rich variety of magnetic phases, ranging from ferromagnet to spin glass to decoupled spin clusters. We examine the behavior for  $x=4.5\%$  at dilution refrigerator temperatures as a function of thermal coupling to a heat reservoir. We show that by cooling the sample in different thermodynamic limits, we can select qualitatively different low temperature magnetic states with different quantum characters. Furthermore, we demonstrate that an external transverse magnetic field, which acts to tune the rate of quantum tunneling, can be used to switch the system between the two states.

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