

Abstract Submitted  
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**Thermal and Magnetic Responses of Spin Ice via SQUID Magnetometry**<sup>1</sup> K. W. SCHLAX, J. A. MOYER, A. THALER, K. SENDGIKOSKI, G. J. MACDOUGALL, P. SCHIFFER, D. J. VAN HARLINGEN, University of Illinois at Urbana-Champaign — The spin ice pyrochlore class of frustrated magnets exhibits quasiparticle excitations that behave like Dirac monopoles on the pyrochlore lattice. We are studying single crystals of the spin ice  $\text{Dy}_2\text{Ti}_2\text{O}_7$  using dc SQUID magnetometry to look for thermal fluctuations in the monopole density. Specifically, we are seeking to observe a local excess of monopole magnetic charge induced by the simultaneous application of a temperature gradient, which should create a gradient in the monopole density, and a parallel magnetic field, which drives the flow and counterflow of oppositely-charged monopoles. This configuration should allow us to investigate the distribution, dynamics, and relaxation of the monopole-like excitations in spin ice pyrochlores.

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