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**Memory and Quantum Erasure in a Disordered Ising Magnet**

C. ANCONA-TORRES, T.F. ROSENBAUM, University of Chicago, G. AEPPLI, University College London — Glasses are well known for their slow relaxation and complex history dependence, including their memory of previous aging after a cycle in temperature or field. We study the breakdown of memory via quantum relaxation by measuring the time-dependent AC susceptibility in  $\text{LiHo}_{0.20}\text{Y}_{0.80}\text{F}_4$ , a diluted, dipolar coupled Ising magnet. Application of a magnetic field transverse to the Ising axis introduces quantum tunneling modes that speed relaxation and provide new pathways through the hierarchical distribution of states. It is possible to compare directly in the same system magnetic aging and memory effects driven by classical (thermal) and quantum (tunneling) channels.

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