

Abstract Submitted  
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**Study of the dipolar coupled Ising system  $\text{LiHo}_x\text{Y}_{1-x}\text{F}_4$  using muon spin relaxation.** JOSE RODRIGUEZ, McMaster University, A.A. ACZEL, S.R. DUNSIGER, G.J. MACDOUGALL, G.M. LUKE, P.L. RUSSO, A.T. SAVICI, Y.J. UEMURA, C.R. WIEBE — In  $\text{LiHo}_x\text{Y}_{1-x}\text{F}_4$  magnetic Ho ions have an Ising character and interact mainly through the magnetic dipolar interaction. For  $x = 1$  the ground state of the system is ferromagnetic and as  $x$  decreases a disordered ground state with glassy properties arises. If  $x$  is decreased further, the system enters a phase sometimes referred to as “antiglass”. Both the non-canonical glassy state and the not yet understood “antiglass”, have never been systematically studied using a microscopic probe. We performed muon spin relaxation measurements in five samples ( $x=0.018, 0.045, 0.08, 0.12$  and  $0.25$ ) which span these disordered phases. In this talk we will show from the microscopic point of view, how does the glassy state manifests itself as well as how does the evolution from the glass to the “antiglass” occurs.

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