

Abstract Submitted  
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**Monopole and Dirac string constrained Dynamics in Spin Ice** LUDOVIC JAUBERT, PETER HOLDSWORTH, Ecole Normale Supérieure de Lyon — Since its discovery approximately 10 years ago [1], spin ice has proved to be an abounding source of exotic collective phenomena, in particular long-range dipolar correlations and unconventional phase transitions. But its most impressive property is undoubtedly the occurrence of 3d fractionalisation through excitations out of its topological ground state, behaving like effective *magnetic monopoles* [2]. I shall present an experimental signature of their influence in magnetic relaxation measurements for a spin ice material  $\text{Dy}_2\text{Ti}_2\text{O}_7$  [3] and show that the observed low temperature dynamical slow down can be explained quantitatively by the Coulomb interactions between monopoles and the overlapping of Dirac strings filling the quasi-particle vacuum [4].

[1] M. Harris & al. Phys. Rev. Lett. **79**, 2554 (1997).

[2] C. Castelnovo & al. Nature **451**, 42-45 (2008).

[3] J. Snyder & al. Phys. Rev. B **69**, 064414 (2004).

[4] L.D.C. Jaubert & P.C.W. Holdsworth (submitted)

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