Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Sorting Category: 06.11.7 (E)

Spin Waves and Quantum Criticality in the Frustrated XY Pyrochlore Antiferromagnet $Er_2Ti_2O_7$ JACOB RUFF, PATRICK CLANCY, BRUCE GAULIN, HANNA DABKOWSKA, MEHMET RAMAZANOGLU, McMaster University, JASON GARDNER, NCNR, ALEX BOURQUE, MARY ANNE WHITE, Dalhousie University, YIMING QIU, JOHN COPLEY, NCNR — We report recent single crystal neutron scattering measurements of the XY pyrochlore antiferromaget $Er_2Ti_2O_7$, in zero and non-zero magnetic field applied along the (110) direction. Previous results show a magnetically-ordered ground state which is suggested to be stabilized by an unusual order-by-disorder mechanism driven by quantum fluctuations [1]. We present measurements of the low-lying spin excitations of this system, revealing Goldstone modes previously thought to be absent [1]. Also, we explore the response of the ground state to applied magnetic fields, which are shown to induce a quantum phase transition separating the low-field antiferromagnetically ordered phase from the high-field polarized phase.
[1] J.D.M. Champion et al. "$Er_2Ti_2O_7$: Evidence of quantum order by disorder in a frustrated antiferromagnet" PRB 68 (2003)

[X] Prefer Oral Session
[ ] Prefer Poster Session

Jacob Ruff
ruffjp@mcmaster.ca
McMaster University

Date submitted: 01 Dec 2007 Electronic form version 1.4