

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Influence of the Dzyaloshinskii-Moriya exchange interaction on quantum phase interference of spins WOLFGANG WERNSDORFER, CNRS, Institut Neel, T.C. STAMATATOS, G. CHRISTOU, Dept. of Chemistry, Uni. of Florida, Gainesville, CNRS, INSTITUT NEEL, GRENOBLE COLLABORATION, DEPT. OF CHEMISTRY, UNI. OF FLORIDA, GAINESVILLE COLLABORATION — Magnetization measurements of a Mn_{12} wheel single-molecule magnet (SMM) with a spin ground state of $S = 7$ show resonant tunneling and quantum phase interference, which are established by studying the tunnel rates as a function of a transverse field applied along the hard magnetization axis. We show how the Dzyaloshinskii-Moriya (DM) exchange interaction can affect the tunneling transitions and quantum phase interference of a SMM. Of particular novelty and importance is the phase-shift observed in the tunnel probabilities of some transitions as a function of the DM vector orientation. Such observations are of importance to potential applications of SMMS that hope to take advantage of the tunneling processes that such molecules can undergo. Ref.: W. Wernsdorfer, T.C. Stamatatos, G. Christou, Phys. Rev. Lett., 101, (28 Nov. 2008).

Wolfgang Wernsdorfer
CNRS, Institut Neel

Date submitted: 20 Nov 2008

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