Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Spin-Electric Coupling in Molecular Magnets MIRCEA TRIF, Department of Physics, University of Basel, Klingelbergstrasse 82, CH-4056 Basel, Switzerland, FILIPPO TROIANI, DIMITRIJE STEPANENKO, DANIEL LOSS, BASEL/MODENA COLLABORATION — We study the triangular antiferromagnet Cu_3 in external electric fields, using symmetry group arguments and a Hubbard model approach. We identify a spin-electric coupling caused by an interplay between spin exchange, spin-orbit interaction, and the chirality of the underlying spin texture of the molecular magnet. This coupling allows for the electric control of the spin (qubit) states, e.g. by using an STM tip or a microwave cavity. We propose an experimental test for identifying molecular magnets exhibiting spin-electric effects.

Mircea Trif
Department of Physics, University of Basel,
Klingelbergstrasse 82, CH-4056 Basel, Switzerland

Date submitted: 18 Dec 2008 Electronic form version 1.4