Chez Pierre

Presents ...

**Monday, November 3, 2008**
**12:00pm**
**MIT Room 4-331**

# Collin Broholm

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# "Surprises on Triangular Lattices"

I discuss anomalous magnetic and electric dipole moment ordering phenomena on the triangular lattice. Neutron Diffraction and pyrocurrent measurements demonstrate the simultaneous appearance of long range magnetic and electric dipole moment order in the spin-5/2 antiferromagnet RbFe(MoO4)2 [1]. In contrast NiGa2S4 does not acquire any long range order even in the extreme low temperature limit [2,3]. I argue that non-collinear correlations characterizing Heisenberg spins in the triangular geometry lie behind both surprises.

[1] M. Kenzelmann, G. Lawes, A.B. Harris, G. Gasparovic, C. Broholm, A.P. Ramirez, G.A. Jorge, M. Jaime, S. Park, Q. Huang, A.Ya. Shapiro, and L.A. Demianets, Phys. Rev. Lett. **98**, 267205 (2007).
[2] Satoru Nakatsuji, Yusuke Nambu, Hiroshi Tonomura, Osamu Sakai, Seth Jonas, Collin Broholm, Hirokazu Tsunetsugu, Yiming Qiu, and Yoshiteru Maeno, Science **309**, 1697 (2005)
[3] C. Stock, S. Jonas, C. Broholm, S. Nakatsuji, Y. Nambu, H. Tonomura, O. Sakai, Y. Maeno, and J.-H. Chung, preprint (2008)