Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

**Proton NMR study of the local magnetic field and fluctuations in a single crystal of the quasi-2D organic conductor $\lambda$-$(BETS)_2FeCl_4$**
PREDRAG RANIN, GUOQING WU, W.G. CLARK, Dept. of Phys. and Astron., UCLA, L.K. MONTGOMERY, Dept. of Chem., Indiana University, L. BALICAS, NHMFL, Tallahassee, FL — Measurements of the proton NMR spectrum and spin-lattice relaxation rate $1/T_1$ in a single, 3 $\mu$g crystal of the quasi-2D organic conductor $\lambda$-$(BETS)_2FeCl_4$ at a magnetic field $B_0 = 9$ T $\parallel a-c$ plane over the temperature ($T$) range 2-180 K are reported. They probe the static local field and its fluctuations in both the antiferromagneic insulator (AFI) and paramagnetic metal (PM) phases. As $T$ is decreased, there is an increase in the shift and the overall width of the NMR spectrum and a jump in these features at the PM-AFI transition ($\sim$4 K). A reasonable fit to these properties in the PM phase is obtained using the dipole field of non- interacting $Fe^{+3}$ ions. These features show that the proton spectrum and $1/T_1$ are dominated by the $Fe^{+3}$ spins. The work at UCLA was supported by NSF Grants DMR-0334869 (WGC) and DMR-0203806 (SEB) and that at Indiana by the Petroleum Research Fund ACS-PRF-33912-ACI.

Predrag Ranin

Date submitted: 01 Dec 2004 Electronic form version 1.4