Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Structural transition in an unusual $5d$-electron ferromagnetic insulator[1] ZAHIRUL ISLAM, R.K. DAS, J.P.C. RUFF, Advanced Photon Source, Argonne National Laboratory, H. LEE, Department of Applied Physics, Stanford University, D.S. ROBINSON, Advanced Photon Source, Argonne National Laboratory, I.R. FISHER, Department of Applied Physics, Stanford University — Double-perovskite barium sodium osmate (Ba_2NaOsO_6) is a ferromagnetic (FM) insulator ($T_c \sim 6.8$ K, ordered moment ~ 0.2 μ_B per formula unit) with $< 110 >$ easy axis. We present precision x-ray diffraction studies on single crystals to understand structural symmetry in this rare FM compound. At room temperature there is a subtle splitting of crystal Bragg peaks indicating the global symmetry to be weakly tetragonal. At or slightly above T_c, the material becomes orthorhombic. These changes are crucial in lifting the degeneracy of d-state manifold and are likely associated with orbital ordering.

[1]Work performed at the Advanced Photon Source was supported by the DOE, under Contract No. DE-AC02-06CH11357.

Zahirul Islam
Argonne National Laboratory

Date submitted: 17 Dec 2012 Electronic form version 1.4