## Abstract Submitted for the MAR09 Meeting of The American Physical Society

Magnetic Ordering and Negative Thermal Expansion in PrFeAsO D.N. ARGYRIOU, S.A.J. KIMBER, F. YOKAICHIYA, K. HABICHT, S. GERISCHER, Helmholtz-Zentrum Berlin fr Materialien und Energie (HZB), Glienicker Strasse 100, D-14109, Berlin, Germany, R KLINGELER, C. HESS, G. BEHR, A. KONDRAT, B. BÜCHNER, Leibniz-Institute for Solid State and Materials Research (IFW) Dresden, Germany, T. HANSEN, T. CHATTERJI, Institute Max von Laue-Paul Langevin, 6 rue Jules Horowitz, BP 156, F-38042, Grenoble Cedex 9, France — We report the structure and magnetism of PrOFeAs, one of the parent phases of the newly discovered Fe-As superconductors, as measured by neutron powder diffraction. In common with other REOFeAs materials, a tetragonalorthorhombic phase transition is found on cooling below 136 K and striped Fe magnetism with k = (1,0,1) is detected below  $\sim 85$  K. Our magnetic order parameter measurements show that the ordered Fe moment along the a axis reaches a maximum at  $\sim 40$  K, below which an anomalous expansion of the c axis sets in, which results in a negative thermal volume expansion of 0.015 % at 2 K. We propose that this effect, which is suppressed in superconducting samples, is driven by a delicate interplay between Fe and Pr ordered moments.

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Date submitted: 07 Dec 2008 Electronic form version 1.4