Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Investigation of magnetic phase transitions in B-site disordered PbBxB'1-xO3 (B = Fe, Co and B' = Nb, Ta) SHRAVANI CHILLAL, ETH Hoenggerberg, Switzerland, ELENA POPOVA, Saint Petersburg State University and Ioffe Physico-Technical Institute RAS, Russia, ERIK EULF, SEVERIAN GVASALIYA, ETH Hoenggerberg, Switzerland, TATIANA SHAPLYGINA, SERGEY LUSHNIKOV, Ioffe Physico-Technical Institute RAS, Russia, ANDREY ZHELUDEV, ETH Hoenggerberg, Switzerland, LABORATORY FOR NEUTRON SCATTERING AND MAGNETISM, ETH HOENGGERBERG, 8093 ZURICH, SWITZERLAND TEAM, IOFFE PHYSICO-TECHNICAL INSTITUTE RAS, 194021 ST. PETERSBURG, RUSSIA COLLABORATION, SAINT PETERSBURG STATE UNIVERSITY, DEPARTMENT OF CRYSTALLOGRAPHY, 199034, ST. PETERSBURG , RUSSIA COLLABORATION — Materials such as $PbFe_{0.5}Nb_{0.5}O_3$ (PFN-0.5)/ $PbFe_{0.5}Ta_{0.5}O_3$ (PFT-0.5) and $PbCo_{0.33}Nb_{0.67}O_3$ (PCN-0.33) are relaxor ferroelectrics. $PbFe_{0.5}Nb_{0.5}O_3$ (PFN-0.5) also shows anti-ferromagnetic order below $\sim$ 143 K. Though multiferroicity is an important property of PFN-0.5, its uniqueness stems from coexisting anti-ferromagnetic and spinglass phases below $\sim$ 12 K. Presently, it is the only known such case in a Heisenberg 3D spin system. We report a first systematic study of the H-T phase diagram of PFN-0.5 and discuss the results in the context of existing theories. In addition, we study the magnetic properties of PFT-0.5 and PCN-0.33. While PFN-0.5 and PFT-0.5 demonstrate similar behavior, PCN-0.33 does not show any anomalies that could signify magnetic ordering. We propose that the observed dramatic differences may result from partial B-site ordering.

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Date submitted: 10 Nov 2011 Electronic form version 1.4