Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Diffuse Scattering from Relaxor PMN-xPT MATTHEW KROGSTAD, Northern Illinois Univ, STEPHAN ROSENKRANZ, RAYMOND OSBORN, JUSTIN WOZNIAK, Argonne Nat'l Lab, FENG YE, Oak Ridge Nat'l Lab., JACOB RUFF, Cornell Univ, PETER GEHRING, NIST, ZUO-GUANG YE, Simon Fraser Univ, DANIEL PHELAN, Argonne Nat'l Lab — Relaxor ferroelectrics possess intriguing electromechanical and dielectric properties, the microscopic physics of which is widely regarded to be related to local, correlated atomic displacements from long-range symmetry. However, despite numerous studies over the last few decades, the details of how short range correlations and disorder drive the relaxor behavior remain unresolved. Single crystal diffuse scattering provides a powerful probe of such deviations from an average structure correlated over varying length scales, and over the last few years, techniques and instruments for measuring diffuse scattering with both x-rays and neutrons have seen a dramatic improvement, allowing for large volumes of reciprocal space to be measured in little time. We present our recent complementary neutron and x-ray measurements on solid solutions of PMN-xPT which revealed new structure to the diffuse scattering of relaxors close to the morphotropic phase boundary.

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Date submitted: 06 Nov 2015 Electronic form version 1.4