

Abstract Submitted  
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**X-ray diffuse scattering from a ferroelectric relaxor**<sup>1</sup> VA YEE VUE, BRANTON J. CAMPBELL, Brigham Young University — Piezoelectric relaxor crystals of PZN-4.5%PT, a solid solution of  $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3$  and  $\text{PbTiO}_3$  perovskites, displays a remarkably-high piezoelectric response of 4500 pC/N. In recent years, PZN-PT has become a popular ceramics for a variety of applications. While the underlying physics is largely unknown, it has been hypothesized that nano-scale polar regions (NPRs) are responsible for the large piezoelectric response in PZN-PT. If NPRs exist, it would be very helpful to structurally characterize them. We have collected a 3D volume of high-energy x-ray diffuse scattering data, and developed an NPR model that explains many of our experimental observations. The work may allow us to better understand and possibly even enhance the useful properties of this material.

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