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Analysis of Topological Defects in Multiferroic.[1] RICHARD MBATANG, SAMUEL DJIANI, DMITRY KARPOV, New Mexico State University, K PAGE, H WANG, D OLDS, Oak Ridge National Laboratory, Oak Ridge TN 37830, USA, B KIEFER, E FOHTUNG, New Mexico State University — Topological defects (TDs), which include domain walls, vortices and skyrmions, are actively being studied. These TDs are of fundamental importance in condensed matter and particle physics with technological implications in the design of future devices for data storage and information. Many theoretical models based on phase-field computation have been used to predict the presence of such TDs in multiferroics (MF). However, the experimental observation of TDs in nanoparticles requires probes capable of probing the volume as a whole of such nanostructures. Here, we use Coherent X-ray diffraction Imaging (CXDI) to map the 3D distribution of strain, TD density and their interaction in a highly inhomogeneous MF nanoparticle exhibiting room temperature magneto-electric coupling; Our choice of CXDI over other scanning optical and electron microscopic approach will be addressed

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