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COBRA Studies of Ultrathin Ferroelectric Oxide Films[1] CODRIN CIONCA, Applied Physics, University of Michigan, D.P. KUMAH, Applied Physics, University of Michigan, C-B EOM, Materials Science and Engineering, University of Wisconsin-Madison, D-M KIM, Materials Science and Engineering, University of Wisconsin-Madison, Y. YACOBY, Racah Institute of Physics, Hebrew University, Jerusalem, Israel, D.A. WALKO, Advanced Photon Source, Argonne National Laboratory, R. CLARKE, Applied Physics, University of Michigan — We used Coherent Bragg Rod Analysis (COBRA) and x-ray synchrotron radiation to investigate the structure of epitaxial thin films of $PbTiO_3$ deposited by sputtering on $SrTiO_3$ substrates. The measurements were performed under different electric field conditions, including the presence of conducting electrodes. The data analysis reveals details of the atomic displacements in different layers and shows subtle variations as a function of distance from the interface. The effects of symmetry breaking at the substrate-film interface are discussed.

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