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Search for Sub lattice Disorder in $CaCu_3Ti_4O_{12}$ KEVIN STONE, JAE-HYUK HER, PETER STEPHENS, Stony Brook University, JONATHAN HANSON, HAIDING MO, CHRISTIE NELSON, LIJUN WU, YIMEI ZHU, Brookhaven National Laboratory — One of the proposed mechanisms for the Internal Barrier Dielectric Capacitance believed to be responsible for the giant dielectric response of the perovskite material $CaCu_3Ti_4O_{12}$ is that of sub lattice disorder on the Ca and Cu sites. Such disorder should have measurable affects on both the intensity and shape of the Bragg peaks of different symmetries. We investigate the possible existence of such disorder through high resolution charge density maps, based on a large dataset of x-ray and electron diffraction integrated intensity measurements, and, separately, peak shape measurements on a restricted set of reflections. Supported by the U.S. Department of Energy.

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