

Abstract Submitted
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Search for structural fluctuations in the disordered stripe state of $\text{Nd}_{1.67}\text{Sr}_{0.33}\text{NiO}_4$ ¹ A.M. MILINDA ABEYKOON, EMIL BOZIN, GENDA GU, JOHN HILL, JOHN TRANQUADA, SIMON BILLINGE, Brookhaven National Laboratory — We present a temperature series PDF and a Rietveld analysis of $\text{Nd}_{1.67}\text{Sr}_{0.33}\text{NiO}_4$ system to study the local structural response in the state above the charge-ordered state that has not been characterized in detail to date. We observed NiO_6 octahedral tilting patterns of different magnitude for short and long-range structure of the system. A sequential Rietveld refinement, and a T-series PDF analysis on the length scale (5-20)Å were carried out to characterize the long-range order of the system. A PDF analysis on the length scale (0-4.2) Å revealed a different magnitude local octahedral tilt pattern as a function of temperature. The correlation length of short-range ordered charge stripes existing above T_{co} was estimated using a Box-Car type PDF model. Combining this information with the refined isothermal atomic displacement parameters (ADPs) yields a much more complete picture of the nature of both atomic displacements and how they are correlated with each other in the system.

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