

Abstract Submitted
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Characterization of a Structural Phase Transition in Ultracold Ion Crystals¹ BRENDIN CHOW, Simon Fraser University, JIE ZHANG, National University of Defense Technology, PAUL HALJAN², Simon Fraser University — We experimentally characterize a structural phase transition, known as the linear-zigzag transition, for arrays of ions confined in a linear radio-frequency Paul trap where the ions are laser-cooled to vibrational energies of a few quanta or less. Enabled by low thermal fluctuations and a stabilized trap potential, we use Raman sideband spectroscopy to investigate effects close to the transition's critical point, including modifications to the nature of the transition, for small arrays of ions. This work builds the foundation for explorations of quantum coherence close to the transition's critical point.

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