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**Probing the Nickelate Ground State in NdNiO<sub>3</sub> Superlattices**

ANKIT DISA, DIVINE KUMAH, JOSEPH NGAI, FRED WALKER, CHARLES AHN, Center for Research on Interface Structures and Phenomena and Department of Applied Physics, Yale University — The rare-earth nickelates of the type RNiO<sub>3</sub> exhibit tunable, sharp metal-insulator transitions as a function of R size, film thickness, and external fields. The nature of these transitions has been the subject of much study, including examination of the insulating ground state. NdNiO<sub>3</sub> has garnered particular interest due to a concomitant magnetic crossover to an antiferromagnetic state occurring at the metal-insulator transition temperature. Several previous studies have focused on thin films; in this work, we examine NdNiO<sub>3</sub> layers confined in heterostructures. The metal-insulator transition temperature can be manipulated based on the thickness of the NdNiO<sub>3</sub> layers within the heterostructure, and a suppression of the high-temperature metallic phase leads to a crossover to localization related to a change in dimensionality. The electronic structure of these phases probed using x-ray absorption spectroscopy enables us to elucidate the link between potential charge ordering and dimensionality in the ground state of this system.

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