Abstract Submitted
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Tunable spin-density-wave order in nickelate heterostructures[1] A. FRANO, Max Planck Insitute for Solid State Research, E. SCHIERLE, Helmholtz-Zentrum Berlin fuer Materialien und Energie, BESSY II, M. HAVERKORT, Y. LU, M. WU, S. BLANCO-CANOSA, U. NWANKWO, A.V. BORIS, P. WOCHNER, G. CRISTIANI, H.U. HABERMEIER, Max Planck Insitute for Solid State Research, V. HINKOV, Quantum Matter Institute, University of British Columbia, E. BENCKISER, Max Planck Insitute for Solid State Research, E. WESCHKE, Helmholtz-Zentrum Berlin fuer Materialien und Energie, BESSY II, B. KEIMER, Max Planck Insitute for Solid State Research — Antiferromagnetic spin-density-wave (SDW) order in metals has been proposed as the basis for a new generation of spintronic devices. However, SDWs have been observed only in a few materials to-date, and it has proven difficult to systematically control their properties. Using resonant x-ray diffraction, we demonstrate SDW order in epitaxial thin films and superlattices based on metallic $R\text{NiO}_3$ with R = La, Nd, Pr. The materials remain highly conductive in the SDW state, and the amplitude of concomitant charge order is dramatically reduced with respect to their bulk analogs. We also show that the SDW polarization is tunable through two independent control parameters – epitaxial strain and dimensional confinement of the conduction electrons. Nickelate heterostructures are thus a powerful new model platform for SDW physics and antiferromagnetic spintronics.

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