

Abstract Submitted
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Photoinduced insulator-to-metal dynamics in strained NdNiO₃ ultrathin films RICHARD D. AVERITT, Department of Physics, Boston University, ELSA ABREU, JINGDI ZHANG, Dpt of Physics, BU, DEREK MEYERS, Dpt of Physics, University of Arkansas, KUN GENG, Dpt of Physics, BU, JAK CHAKHALIAN, Dpt of Physics, U of Arkansas — Epitaxial rare-earth nickelate thin films are ideally suited for the study and control of electronic correlations associated with the insulator-to-metal phase transition since strain can be precisely controlled. We investigate picosecond conductivity dynamics of strained NdNiO₃ utilizing time-domain terahertz spectroscopy. Starting from the insulating phase, photoexcitation results in a conductivity increase towards the metallic state. The dynamics consist of a fast 1ps increase accompanied by a slower increase occurring over tens of picoseconds. These results will be compared to those obtained on the vanadates where the slow rise time is ascribed to nucleation and growth of the metallic phase.

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