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Electronic Structure and Transport Properties of $LaNiO_3/LaAlO_3$ Heterostructures[1] BENJAMIN GRAY, JIAN LIU, MIKHAIL KAREEV, University of Arkansas, ROSSITZA PENTCHEVA, Ludwig Maximilians University, DANIIL KHOMSKII, Universitaet zu Koeln, PHILIP RYAN, J.W. FREELAND, Advanced Photon Source, ANL, JAK CHAKHALIAN, University of Arkansas — In the bulk, the ground state of $LaNiO_3$ manifests itself as a correlated metal without magnetic ordering. Recent advances in fabrication of ultra-thin oxides allow for the synthesis of interface-controlled heterostructures with properties not attainable in their bulk counterparts. Towards this end, we fabricated high-quality $LaNiO_3/LaAlO_3$ superlattices epitaxially grown on $SrTiO_3$ and $LaAlO_3$ substrates by laser MBE. During the talk we present the experimental findings about effects of strain and proximity to the interface on the electronic and orbital structure of Ni, Al and O deduced from synchrotron soft x-ray spectroscopy, XRD, and bulk electric and thermal measurements.

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