

Abstract Submitted  
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**ARPES studies in LaTiO<sub>3</sub>/SrTiO<sub>3</sub> heterostructures**<sup>1</sup> YOUNG JUN CHANG, Advanced Light Source and Fritz-Haber-Institut, LUCA MORESCHINI, ALS, YONG SU KIM, ALS and Hanyang University, ANDREW L. WALTER, ALS and Fritz-Haber-Institut, DAVIDE INNOCENTI, ALS and University of Rome “Tor Vergata”, AARON BOSTWICK, GEOFFREY A. GAINES, ALS, KARSTEN HORN, Fritz-Haber-Institut, ELI ROTENBERG, ALS — Electronic band structure of LaTiO<sub>3</sub>/SrTiO<sub>3</sub> heterostructures was studied using angle resolved photoemission spectroscopy (ARPES). LaTiO<sub>3</sub> films, grown by in situ pulsed laser deposition (PLD) on beamline 7.0.1 at Advanced Light Source, exhibit a thickness-dependent phase transition from the correlated metallic interface to Mott insulator. We observed the quasi-particle peak at the Fermi level explaining the metallic interface for ultrathin LaTiO<sub>3</sub>, and the band gap opened for thick LaTiO<sub>3</sub> similar to the bulk. We compare the thickness dependent electronic structure with theoretically calculated phase diagram (S. Okamoto and A. J. Millis, Nature 428, 630 (2004)).

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