Abstract Submitted
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Substrate-induced strain effects on the transport properties of pulsed laser deposited Nb doped $SrTiO_3$ films.[1] WEGDAN RAMADAN, SATISH OGALE, SANKAR DHAR , SHIXIONG ZHANG, DARSHAN KUNDALIYA, ISSEI SATOH, THIRUMALAI VENKATESAN, Center for Superconductivity Research, Department of Physics, University of Maryland, College Park, MD 20742-4111 — Thin films of Nb doped $SrTiO_3$(NSTO) are grown via pulsed laser deposition (PLD) on $LaAlO_3$ (LAO, 001), $MgAl_2O_4$ (MAO, 001), $SrTiO_3$ (STO, 001), and Y-stabilized ZrO_2(YSZ, 001) substrates. The film growth is examined under various growth conditions. The dependence of film properties on the film-substrate lattice mismatch, film thickness, and substrate temperature is investigated. The electrical transport in NSTO films is shown to exhibit a strong sensitivity to strain, which is suggested to arise from the dependence of carrier mobility on bond distortions/stretching and related changes in phonon modes.

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