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**Interfacial superconductivity and its magnetic field dependence in MBE-grown  $\text{LaAlO}_3/\text{SrTiO}_3$  heterostructures** P. ROY, J. LUDWIG, E. STEVEN, A. KISWANDHI, A.A. PAWLICKI, J. BROOKS, M.P. WARUSAWITHANA, Department of Physics and NHMFL, Florida State University, D.G. SCHLOM, Department of Materials Science and Engineering, Cornell University, C. RICHTER, J. MANNHART, Experimentalphysik VI, University of Augsburg — In our MBE-grown  $\text{LaAlO}_3/\text{SrTiO}_3$  samples we find the interface to be conducting and sometimes even superconducting when the La/Al ratio is less than or equal to  $0.97 \pm 0.03$ . Here, we report on the superconducting behavior observed in some samples with La/Al ratio above  $0.84 \pm 0.03$  and below  $0.97 \pm 0.03$ . The superconducting critical temperature is found to be between 160 – 235 mK on different samples. We measure the magnetic field dependence of superconductivity and find that the critical magnetic field required to quench superconductivity depends on the direction of the applied magnetic field. The strong anisotropy in the critical field suggests that the superconductivity in these MBE-grown samples is confined to a thin layer at the interface.

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