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**Low temperature, high magnetic field magnetoresistance and Hall measurements on MBE-Grown  $\text{LaAlO}_3/\text{SrTiO}_3$  interfaces** J. LUDWIG, P. ROY, 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 — We have measured MBE-grown  $\text{LaAlO}_3/\text{SrTiO}_3$  samples at temperatures ranging from room temperature to 20mK and at magnetic fields up to 18 Tesla. The  $\text{La}_{(1-x)}\text{Al}_{(1+x)}\text{O}_3$  films studied were grown with a stoichiometry gradient (varying  $x$ ). We report on the low-temperature sheet carrier density and mobility of the conducting samples – samples with La/Al ratio less than or equal to  $0.97 \pm 0.03$ . We discuss the dependence of sheet carrier density and mobility on stoichiometry by using samples grown on the same substrate and then isolated by using a wire saw. In the devices we measured, the low-temperature sheet carrier densities are on the order of  $1 \times 10^{13} \text{ cm}^{-2}$  with an approximate variation of  $2 \times 10^{12} \text{ cm}^{-2}$  from device to device. The mobilities observed are on the order of  $1 \times 10^3 \text{ cm}^2 \text{ V}^{-1} \text{ s}^{-1}$ .

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