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Low temperature transport at the {111} $LaAlO_3/SrTiO_3$ interface.[1] S. DAVIS, Applied Physics Program, Northwestern University, V. CHANDRASEKHAR, Department of Physics and Astronomy, Northwestern University, Z. HUANG, K. HAN, ARIANDO ., T. VENKATESAN, Department of Physics, National University of Singapore — For the last ten years the interface between epitaxially grown {001} $LaAlO_3$(LAO) and $SrTiO_3$ (STO) has provided a rich playground for exotic physics, including a gate-tuned metal to insulator transition, a gate-tuned superconductor-insulator transition, and the coexistence of 2-D superconductivity and magnetism. Recently the interfaces in other orientations of LAO-STO, namely the {110} and {111} orientations, have received increased attention after they were shown to become conducting. The {111} interface is particularly interesting due to its potential for topological effects as well as its complex Fermi surface. Here we present the results of low temperature electrical transport studies along two crystal directions of a {111} LAO-STO interface grown in intermediate oxygen partial pressures via PLD. More specifically we measure the longitudinal resistance as well as the transverse (Hall) resistance to elucidate the difference between the {111} and {001} LAO/STO interfaces.

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