
Hall effect and superconductivity in nanoscale STO/LAO devices

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Abstract

In this talk our recent transport measurements on nano-lithographic STO/LAO devices will be presented. The nanoscale geometry of our devices allows us to vary significantly the sheet carrier density at the interface by applying very small gate voltages. Superconducting transition temperature and critical magnetic fields are measured in the wide range of carrier densities. We observe non monotonic behavior of Hall coefficient which is correlated with non monotonic variation of the superconducting transition temperature. We will discuss the observed anomalous behavior of the Hall coefficient in the framework of two band model. The effect of the coupling between the bands and its consequences will be considered..

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