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Anomalous metallic state: Decisive effect of dilute impurity doping on ferromagnetic $BaIrO_3$ single crystals[1] O.B. KORNETA, S. CHIKARA, T.F. QI, S. PARKIN, G. CAO, University of Kentucky, W.H. SONG, Institute of Solid State Physics, Hefei 230031, P.R. China — $BaIrO_3$ is a quasi one-dimensional system, where a CDW and a ferromagnetic state with T_C=183K coexist. The ground state of the system is critically linked to the lattice and orbital degrees of freedom due to extended 5*d*-orbitals. The central findings of this study are: (1) An occurrence of a 2D-metallic state with a linear temperature dependence of resistivity at low temperatures in slightly oxygen-deficient samples; (2) Unusual temperature dependence of resistivity above the Curie temperature in the rare-earth doped BaIrO3; (3) High sensitivity of the resistivity to applied pressure ($<$ 12 Kbar), which results in changes in resistivity by a few orders of magnitude in these doped samples. The results of the resistivity, heat capacity, magnetization, thermoelectric power and structural measurements as a function of temperature, magnetic field, and pressure will be presented and discussed.

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