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Pressure-Induced Insulating State in $Ba_{1-x}RE_xIrO_3$ (RE = Gd, Eu) Single Crystals[1] O.B. KORNETA, S. CHIKARA, G. CAO, L.E. DELONG, Center for Advanced Materials, University of Kentucky, P. SCHLOTTMANN, Department of Physics, Florida State University, S. PARKIN, Department of Chemistry, University of Kentucky — $BaIrO_3$ is a novel insulator with coexistent weak ferromagnetism, charge and spin density wave. Dilute RE doping for Ba induces a metallic state, whereas application of modest pressure ($\leq$ 12.1 kbar) readily restores an insulating state characterized by a three-order-of-magnitude increase of resistivity. A pressure-induced insulating state is not common, and has never been observed in 5d-electron materials. The profoundly dissimilar responses of the ground state to light doping and low hydrostatic pressures signal an unusual, delicate interplay between structural and electronic degrees of freedom in $BaIrO_3$.

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