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Local modification of spin orbit coupling in Sr₂IrO₄ KYLE MCELROY, JIXIA DAI, EDUARDO CALLEJA, Univ of Colorado - Boulder, GANG CAO, University of Kentucky — Sr₂IrO₄ has a novel Mott insulating ground state that is a result of strong spin orbit coupling (SOC) splitting the t_{2g} states leaving a small bandwidth J_{eff}=1/2 valence band that can then be localized by the small 5d Coulomb repulsion. In order to investigate the effects that the strong SOC has on the novel ground state we have doped them with Rh⁴⁺ atoms, which lower the SOC, which substitute for the the Ir⁴⁺ ions. In bulk it has been shown that with only a small Rh concentration changes the insulating state to a metallic one and the low temperature magnetic state weakens. We have found several interesting results in these doped materials and will discuss them and what they tell us about the ground state of Sr₂IrO₄.

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