

Abstract Submitted
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Mapping the phase diagram of $(\text{Sr}_{1-x}\text{La}_x)_3\text{Ir}_2\text{O}_7$ TOM HOGAN, Boston College, ZAHRA YAMANI, Canadian Neutron Beam Centre, ZAC WARD, Oak Ridge National Laboratory, STEPHEN WILSON, University of California - Santa Barbara — Here we present an experimental study of the $(\text{Sr}_{1-x}\text{La}_x)_3\text{Ir}_2\text{O}_7$ phase diagram, exploring the evolution of magnetic, charge, and structural degrees of freedom as the system undergoes a rapid insulator-to-metal phase transition. The parent $J_{eff}=\frac{1}{2}$ Mott state melts, revealing a first order-like phase boundary between a localized antiferromagnetic metallic state and a correlated metal. The evidence of a rich interplay of correlated effects upon doping the bilayer $\text{Sr}_3\text{Ir}_2\text{O}_7$ will be discussed and presents an argument for the persistent influence of correlation physics once the metallic regime is reached in this and related spin-orbit Mott materials.

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