

Abstract Submitted  
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**Electronic and magnetic phase evolution in  $\text{Sr}_3(\text{Ir}_{1-x}\text{Ru}_x)_2\text{O}_7$**   
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OPEIL, STEPHEN WILSON, Boston College — A great deal of recent focus has  
been given to understanding how the interplay of strong spin orbit coupling effects  
and onsite coulomb repulsion change the conventional energy hierarchy in correlated  
5d electron iridium oxides. Contrary to conventional band theory, perovskite iridate  
compounds  $\text{Sr}_2\text{IrO}_4$  and  $\text{Sr}_3\text{Ir}_2\text{O}_7$  have long been known to be insulators; however  
many of their fundamental electronic properties and the interactions responsible  
for generating their antiferromagnetic insulating ground states remain under inves-  
tigation. Here, we report results from our transport and magnetization study of  
electronic and magnetic phase of  $\text{Sr}_3\text{Ir}_{1-x}\text{Ru}_x\text{O}_7$ . The evolution of the phase be-  
havior as  $\text{Sr}_3\text{Ir}_2\text{O}_7$  is tuned from an AF insulator to a paramagnetic metal and the  
potential for a first order metal to insulator transition will be discussed.

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