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Exploring Magnetic Ordering in Sr3Ir2O7[1] SOVIT KHADKA, CHETAN DHITAL, Physics Department, Boston College, WEI TIAN, Oak Ridge National Laboratory, TN, USA, STEPHEN WILSON, Physics Department, Boston College — Iridium oxide members of the Ruddlesden-Popper series have generated a great deal of interest recently due to their novel Mott insulating phases within these $5d$-electron systems. These surprising Mott phases have been proposed to form due to a delicate interplay between spin orbit coupling effects and electronic correlation [1]. Here we present measurements probing the nature of the spin correlations and charge behavior in the bilayer variant of the Ruddlesden-Popper series, $Sr_3Ir_2O_7$. Our neutron scattering results reveal an antiferromagnetic spin structure and will be discussed in parallel with transport and bulk magnetization measurements detailing the electronic behavior in this material.

[1] B. J. Kim et al., Phys. Rev. Lett. 101, 076402 (2008).

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Sovit Khadka
Physics Department, Boston College

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