Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

**Magnetic Excitations in Thin Film Ba2IrO4 and Sr2IrO4 Probed by Resonant Inelastic X-ray Scattering** J.P. CLANCY, A. LUPASCU, H. GRETARSSON, University of Toronto, M.H. UPTON, J. KIM, Z. ISLAM, Argonne National Laboratory, M. UCHIDA, D.G. SCHLOM, K.M. SHEN, Cornell University, J. NICHOLS, J. TERZIC, G. CAO, S.S.A. SEO, University of Kentucky, V.M. KATUKURI, L. HOZOI, J. VAN DEN BRINK, IFW Dresden, H. STOLL, Stuttgart University, Y.-J. KIM, University of Toronto — We have performed resonant inelastic x-ray scattering (RIXS) measurements on epitaxial thin film samples of the layered perovskite iridates Ba2IrO4 and Sr2IrO4. These materials display a novel Jeff = 1/2 Mott insulating ground state driven by strong 5d spin-orbit coupling effects. By studying 10 to 50 nm thin film samples grown on a variety of different substrates (GSO, STO, LSAT), we have investigated the impact of applied tensile/compressive strain on the characteristic magnetic and electronic excitations of these materials. Unlike other perturbations, such as doping or applied magnetic field, we find that applied strain does not alter the magnetic structure of Ba2IrO4 or Sr2IrO4. However, strain does affect the magnetic energy scales of these systems, providing a means of tuning both the ordering temperature (Tn) and the magnetic exchange interactions (J). In addition, we show that the dispersion of the low-lying magnon and spin-orbit exciton modes is renormalized by strain-induced structural changes.

James Clancy
Univ of Toronto

Date submitted: 12 Nov 2013 Electronic form version 1.4