Abstract Submitted
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Giant Magneto-electric Effect in the J_{eff} = ½ Mott Insulator Sr_2IrO_4[1] S. CHIKARA, O.B. KORNETA, L.E. DELONG, G. CAO, Center for Advanced Materials, University of Kentucky, W.P. CRUMMET, Science Division, Centre College, Danville, KY 40422, P. SCHLOTTMANN, Department of Physics, Florida State University — Our magnetic, electrical, and thermal measurements on single-crystals of the $J_{eff} = 1/2$ Mott insulator, Sr_2IrO_4, reveal a novel giant magneto-electric effect (GME) arising from a frustrated magnetic/ferroelectric state [1] whose signatures are: (1) a strongly enhanced electric permittivity that peaks near a newly observed magnetic anomaly at 100 K, and (2) a large (∼100%) magneto-dielectric shift that occurs near a metamagnetic transition. The GME hinges on a spin-orbit gapping of 5d-bands, rather than the magnitude and spatial dependence of magnetization, as traditionally accepted.

[1] S. Chikara, et al, Phys. Rev. B 80, 140407 (R) (2009)

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