

Abstract Submitted
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The intrinsic magnetic structure and ordering of multiferroic h-LuFeO₃ Films WILLIAM RATCLIFF, STEVEN DISSELER, JULIE BORCHERS, NIST, CHARLES BROOKS, JULIA MUNDY, Cornell University, JARRETT MOYER, University of Illinois at Urbana-Champaign, DANIEL HILLSBERRY, ERIC THIES, DMITRI TENNE, Boise State University, JOHN HERON, Cornell University, JAMES CLARKSON, University of California, Berkeley, GREGORY STIEHL, Cornell University, PETER SCHIFFER, University of Illinois at Urbana-Champaign, DAVID MULLER, DARRELL SCHLOM, Cornell University — It has been previously reported that h-LuFeO₃ films are ferroelectric and magnetically ordered above room temperature [1]. During this talk, we discuss our recent results [2] on well characterized molecular beam epitaxy grown films. While we find the films are ferroelectric at room temperature, we find that films grown on both YSZ (111) and Al₂O₃ (0001) substrates are magnetically ordered well below room temperature. The magnetic order is the standard 120 degree structure found in these materials, with a canted moment out of the a-b plane. We find that the magnetic structure of these films is consistent with the possibility of switching this small canted moment with an electric field [3].

[1] W. Wang et al, Phys. Rev. Lett. 100, 237601 (2013).

[2] Steven M. Disseler et al, arXiv:1411.1694 (2014).

[3] H. Das et al, Nat. Commun. 5, 2998 (2014).

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