

Abstract Submitted
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Model for twin electromagnons and magnetically induced oscillatory polarization in multiferroic RMnO_3 ¹ ROGÉRIO DE SOUSA, MARKKU STENBERG, Dept. of Physics and Astronomy, University of Victoria, B.C. — We propose a model [1] for the pair of electromagnon excitations observed in the class of multiferroic materials RMnO_3 (R is a rare-earth ion). The model is based on a harmonic cycloid ground state interacting with a zone-edge magnon and its twin excitation separated in momentum space by two times the cycloid wave vector. The pair of electromagnons is activated by cross coupling between magnetostriction and spin-orbit interactions. Remarkably, the spectral weight of the twin electromagnon is directly related to the presence of a magnetically induced oscillatory polarization in the ground state. This leads to the surprising prediction that TbMnO_3 has an oscillatory polarization with amplitude 50 times larger than its uniform polarization. [1] M.P.V. Stenberg and R. de Sousa, Phys. Rev. B **80**, 094419 (2009) (Editors' suggestion).

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Rogério de Sousa
Dept. of Physics and Astronomy, University of Victoria, B.C.

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