

Abstract Submitted
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Theory of electrical control of spin waves in multiferroic materials¹ ROGERIO DE SOUSA, JOEL MOORE, University of California, Berkeley — We consider the question of electrical generation, control, and detection of magnons in thin films of multiferroic BiFeO_3 . This material possesses simultaneous ferroelectric and antiferromagnetic order, with Dzyaloshinskii-Moriya and other magnetoelectric couplings. The spectrum for the coupled spin and polarization waves is found to be extremely anisotropic, allowing the control of spin waves via electrical switching of the direction of the spontaneous polarization vector. Electrical generation and detection of spin waves is optimal at the anticrossings of the polarization and magnetic branches, where the excitations have electromagnon character.

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