

Abstract Submitted
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**Spin-Wave Transmission in Ferromagnetic Thin Films:
Flexoelectric Control and Spin-Wave Drag**¹ TIANYU LIU, GIO-
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FLATTE, University of Iowa — Spin waves in insulating ferromagnets
have recently emerged as an effective low-dissipation carrier of spin cur-
rents. In this work we explore a novel form of control of spin waves by
flexoelectric interactions, which couple an electric field to the spatial gra-
dient of the magnetization. We show that not only the short-wavelength
exchange spin waves, but also the long-wavelength magnetostatic spin
waves in a thin-film of magnetic insulator can be effectively controlled by
an electric field. In fact, the relative electric-field-induced phase shift is
even larger for magnetostatic spin waves than for exchange spin waves.
We further show that spin waves in an insulating ferromagnetic film
can excite a spin current in an adjacent conducting or insulating film,
by way of long-ranged dipole-dipole interaction between the layers, in a
magnetic analogue of the electronic Coulomb drag.

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