Abstract Submitted
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Examination of spin waves in a two-dimensional magnetic superlattice[1] GLADE SIETSEMA, MICHAEL FLATTÉ, University of Iowa — We have studied the properties of spin waves in two-dimensional periodic superlattices of magnetic materials.[1] Frequencies and linewidths are calculated for square and hexagonal symmetry superlattices from the Landau-Lifshitz-Gilbert equations. Large differences in the saturation magnetizations and exchange stiffness constants of the materials are shown to be capable of producing gaps in the magnonic spectrum across the entire superlattice Brillouin zone. For example, with a hexagonal superlattice of Fe and YIG we find gaps of 0.5THz and 1THz within the lowest four bands. Additionally, calculations of the system's Green's functions are used to examine the superlattice's response to pulse excitations, such as from a spin torque oscillator.

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