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Visualizing dispersion curves for spin waves in ferromagnetic thin films ADAIR BROWN, JASON LIU, Georgia Southern University — Spin waves are the propagating disturbances of magnetic moments in ferromagnetic materials. Spin waves can be used to transfer information without the joule heating associated with moving charges. Information can be encoded in the amplitude, frequency, or phase of the spin waves. The propagation of spin waves is governed by material parameters and can be calculated with dispersion relations. In this work, a graphics user interface (GUI) was developed for calculating and displaying dispersion relations for spin waves in ferromagnetic thin films. The GUI produces plots from calculations that are based on dipole-dipole and exchange interactions of spins. A python platform was used to develop the GUI and offers users a series of input parameters such as applied external field, saturation magnetization, film thickness, and material damping parameter. The GUI provides users with a more efficient way of calculating and visualizing dispersion relations by reducing the time and need to build individual scripts.

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