Abstract Submitted
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Spin waves of ferromagnetic films[1] RODRIGO ARIAS, Universidad de Chile — The spin wave modes of ferromagnetic films have been studied for a long time experimentally as well as theoretically: initially magnetostatic and later dipole-exchange modes. Theoretically dipole-exchange modes have been solved exactly numerically for some configurations and boundary conditions, and there are approximations of their frequency dispersion relations based on infinite series solutions and perturbation theory, valid for arbitrary orientations of an applied magnetic field, and for boundary conditions that allow varying degrees of pinning. A theoretical method that allows to determine with ease the exact frequency dispersion relations of the dipole-exchange modes is presented: it is required to solve numerically a 6x6 linear eigenvalue problem at each wavevector of interest; the spin wave modes inside or outside the sample may be plotted. Analogous calculations may be done to determine magnetostatic modes in detail. The method corresponds to a generalization of Green's theorem to the problem of determining the dipole-exchange modes of a ferromagnetic film: convolution integral equations for the magnetization and magnetostatic potential are derived on the surfaces of the film that become simple local algebraic equations in Fourier space, or for specific wavevectors.

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