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Theory of Ferromagnetic Resonance in Perpendicularly Magnetized Nanodiscs; Excitation by Injected AC Current[1] RODRIGO ARIAS, Departamento de Fisica, FCFM, Universidad de Chile, DOUGLAS MILLS, Department of Physics and Astronomy, UC Irvine — Recent experiments explore the ferromagnetic resonance (FR) response of nanodiscs incorporated into nanopillars, where a DC spin torque current has a small AC component superimposed. For such a circular perpendicularly magnetized disc, we develop the theory of the FR response via AC current. Earlier we discussed the vortex state induced by the DC Oersted field in such a sample, and the nature of the spin waves in the presence of the vortex[2]. The present study explores the linear response of the disc, when a small AC current is superimposed on the DC current. A Green's function approach allows us to describe the linear response of the system. We argue that the AC component of the Oersted field is responsible for spin wave excitation; the modes excited thus differ from those observed in ferromagnetic resonance studies via microwaves. We shall present calculations which explore the spectrum and eigenvectors of modes excited by modulation of the DC current, their width as a function of DC current, and their intensity. [2]R. E. Arias and D. L. Mills, Phys. Rev. B**75**, 214404 (2007).

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