

Spin waves excitations in cylindrical nanowire in crossover dipolar-exchange regime

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We investigated the spin wave dynamics in solid Ni nanowire of circular cross section[1]. We use semi-analytical calculations and numerical computation based on finite element method to find spin wave eigenmodes using the Landau-Lifshitz equation. We identified the dispersion branches and their (anti)crossing by: (i) calculating the contribution of exchange and dipolar energies, (ii) plotting the spatial profiles of spin wave amplitudes and magnetostatic potential. We showed that the frequency and the group velocity of different waveguide modes can be tuned by the application of external magnetic field.

References:

[1] T. K. Das and M. G. Cottam, J. Appl. Phys. 109, 07D323 (2011)

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