



Magnetostatic spin solitons in ferromagnetic nanotubes

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Résumé en anglais
We study the linear and nonlinear evolution of a magnetostatic spin wave (MSW) in a charge free, isotropic ferromagnetic hollow nanotube. By analyzing the dispersion relation we observe that elliptically polarized forms of wave can propagate through the ferromagnetic nanotube. Using the multiple scale analysis we find that the dynamics of magnetization of the medium is governed by the cubic nonlinear Schrödinger equation. The stability of the continuous wave, related to the propagation of either bright or dark (MS) solitons in the nanotube, is governed by the direction of the external magnetic field relative to the magnetized nanotube.

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