

Influence of curvature on the dynamical susceptibility of bent nanotubes

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Abstract

In this work we analyze the influence of curvature on the dynamic properties of the magnetization in bent nanotubes. Our results show that both the resonance frequencies and the number of resonant peaks have a strong dependence on the ground state of the magnetization created by the curvature. Our results can be understood from the analysis of the effective anisotropy and the Dzyaloshinskii–Moriya interaction (DMI) induced by curvature. The ability to control the dynamic properties of these curved ferromagnets makes them excellent candidates for developing applications based on resonant modes of spin waves. © 2022 The Author(s)

Author keywords

Bent nanotubes; Curvature; Dynamical susceptibility; Magnetic nanotubes; Micromagnetic simulations