

DIPOLE-EXCHANGE SPIN  
WAVES IN A FERROMAGNETIC NANOTUBE

*Yu.I. Gorobets<sup>1</sup>, V.V. Kulish<sup>2</sup>*

<sup>1</sup>Institute of Magnetism, Nat. Acad. of Sci. of Ukraine  
(*36-b, Vernads'kogo Str., Kyiv 03142, Ukraine*),

<sup>2</sup>Department of General and Experimental Physics,  
National Technical University of Ukraine  
"Kyiv Politechnic Institute"  
(*37, Peremogy Prosp., Kyiv 03056, Ukraine*)

S u m m a r y

Spin waves in a cylindrical ferromagnetic nanotube are studied. A nanotube with an external magnetic field applied parallel to its symmetry axis is considered. A linearized Landau–Lifshitz equation in the magnetostatic approximation is used with regard for the magnetic dipole-dipole interaction, exchange interaction, and anisotropy effects. As a result, the dispersion relation and the radial wavenumber spectrum for spin waves in the above-described nanotube are found. From the radial wavenumber spectrum, limitations on the transverse-angular modes are defined.