

SPIN WAVES IN ARRAYS
OF MAGNETIC NANODOTS
WITH MAGNETODIPOLAR COUPLING

R. V. Verba

Taras Shevchenko National University of Kyiv
(64, Volodymyrs'ka Str., Kyiv 01601, Ukraine;
e-mail: verrv@ukr.net)

S u m m a r y

A general theory of collective spin-wave excitations in finite and infinite periodic arrays of magnetic nanodots with magnetodipolar coupling has been developed. Non-uniform profiles of static and dynamic magnetizations in a dot are taken into account. The theory allows the spectra of collective excitations, their damping rates, excitation efficiencies by an external microwave field, and so on to be calculated and the stability of a stationary magnetic array configuration to be analyzed. An efficient technique has been proposed to calculate the spin-wave spectra in periodic arrays using the method of projection onto the eigenmodes of a solitary nanodot. The results obtained are compared with experimental data.