

ON THE THEORY OF STRESS-MAGNETIC
FIELD PHASE DIAGRAM OF THE FINITE SIZE
MULTIFERROICS: COMPETITION BETWEEN
FERRO- AND ANTIFERROMAGNETIC DOMAINS

H.V. Gomonay^{1,2}, I.G. Korniienko², V.M. Loktev¹

¹Bogolyubov Institute for Theoretical Physics,
Nat. Acad. of Sci. of Ukraine
(14b, Metrolohichna Str., Kyiv 03680, Ukraine;
e-mail: *malyshen@ukrpack.net*),

²National Technical University of Ukraine "KPI"
(37, Peremogy Ave., Kyiv 03056, Ukraine)

S u m m a r y

Macroscopic properties of multiferroics, the systems that show simultaneously two types of ordering, could be controlled by the external fields of different nature. We analyze the behavior of multiferroics with antiferro-(AFM) and ferromagnetic (FM) ordering under the action of external magnetic and stress fields. A combination of these two fields makes it possible to achieve macroscopic states with different domain structures. The two-domain state obtained in this way shows a linear dependence of macroscopic strain vs magnetic field which is unusual for AFMs. A small but nonzero stress applied to the sample can also result in the bias of the magnetization vs magnetic field dependence.