

**DRIVEN BY STRESS AND MAGNETIC FIELD DOMAIN  
STRUCTURE OF THE FINITE SIZE MULTIFERROIC WITH  
ANTIFERROMAGNETIC ORDERING**

**H. Gomonay<sup>a,b</sup>, Ie. Korniienko<sup>a</sup> and V. Loktev<sup>a,b</sup>**

<sup>a</sup>National Technical University of Ukraine “KPI”,  
37 Peremogy Ave., 03056 Kyiv, Ukraine

<sup>b</sup>Bogolyubov Institute for Theoretical Physics NAS of Ukraine,  
14-b Metrologichna str., 03143, Kyiv, Ukraine

Macroscopic properties of multiferroics, the systems that show simultaneously two types of ordering, could be controlled by the external fields of different nature. In the present paper we analyze the behavior of multiferroic with antiferromagnetic ordering under the action of the external magnetic and stress fields. Our calculations show that such a combination of fields makes it possible to separate the field influence on the different coexisting order parameters. This, in turn, opens a way to control the domain structure and macroscopic properties (such as elongation, magnetization, polarization, etc) and to produce the states with any desirable types of domains.

Simultaneous application of two fields can also increase susceptibility of the sample to one of the fields. The range of field values in which the system is sensible to the external fields can be controlled by the appropriate choice of the sample shape and corresponding shape-induced “de-” fields (destressing, depolarizing, demagnetizing, etc.).

13.4 cm

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**Corresponding author :**

Ie. Korniienko—1

**Address for correspondence :**

Physical and Mathematical Faculty,  
National Technical University of Ukraine “Kyiv Polytechnic Institute”,  
37 Peremogy Ave.,  
Kyiv 03056,  
Ukraine

**Email address :**

evgenia.kornienko@gmail.com

9.7 cm