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**Strain Effect in the Problem of Critical Thickness for Ferroelectric Memory** A.M. BRATKOVSKY, Hewlett-Packard Labs, Palo Alto, A.P. LEVANYUK, U Autonoma Madrid, Spain — We account for inhomogeneous strains while calculating *two* characteristic thicknesses arising in the problem of critical thickness for ferroelectric memory. One of them marks the stability limit of metastable single domain state under zero external voltage with respect to small fluctuations (spinodal point of the single domain state.) The second one appears when free energies of the single and multidomain state become equal while the latter is considered within one- sinusoidal approximation [1]. At this thickness the single domain state remains metastable, but one may hope that the lifetime of this state becomes suitable for the memory applications[2]. We use the Landau approach for elastically isotropic solid with a single electrostriction constant to illustrate general behavior. It is found that the effect of the elastic strains is qualitatively different for free-standing films versus films on substrates.

[1] A.M. Bratkovsky and A.P. Levanyuk, arXiv: 0801.1669.

[2] A.M. Bratkovsky and A.P. Levanyuk, Phys. Rev. Lett. **100**, 149701 (2008).

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