

## NONIDEAL BOUNDARIES AND PROPAGATION OF BULK MAGNETOELASTIC WAVES

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Ferromagnetic materials are unique objects for both experimental and theoretical research and have a range of important features including the propagation of magnetoelastic waves. This problem is interesting both from the side of studying of the magnetism nature and from the side of applying of this effect in engineering.

In the present work we suggest to study the behavior of magnetoelastic waves in approximation of geometrical optics on an example of ferromagnetic with uniaxial magnetic anisotropy and isotropic elastic properties. We consider a magnetoelastic wave that propagates perpendicular to a boundary of two half-infinite uniform ferromagnets having different values of parameters of exchange interaction and uniaxial anisotropy, according to JWKB method [1].

We have obtained the dependences of the intensity of the reflected magnetoelastic waves for different values of parameter  $A$ , which characterizes a coupling in the interface. Intensity of reflection depends essentially on value of parameter  $A$ , and it is especially important at small values of this parameter. Besides, intensities of reflection depend in different ways on wave frequency for each component of magnetoelastic wave. Figs. 1-2 represent the dependence of reflection intensity for three components of reflected wave on the magnetoelastic wave frequency.

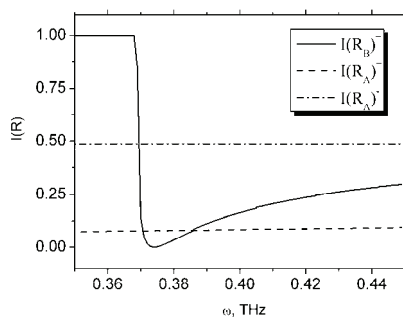


Fig. 1. Dependence of reflection intensity at  
 $A = 10^{-4}$  sm.

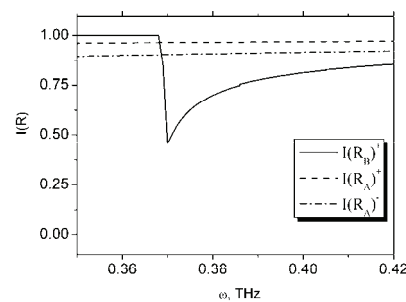


Fig. 2. Dependence of reflection intensity at  
 $A = 10^{-7}$  sm.

Mentioned detail of the propagation of magnetoelastic waves in ferromagnetic media plays an important role and has to be taken into account at construction of devices of microelectronics, such as high-sensitive sensors of magnetoelastic waves.

### References

- [1] Mors P.M., Feshbach H. Methods of Theoretical Physics. - Part 2. - Moscow: Izd. In. Lit., 1960