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On the interaction of composite plate having a vibration-absorbing covering with incident acoustic wave. (English. Russian original) [Zbl 1329.74133](#)

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Summary: We formulate the coupled problem of planar acoustic wave propagation through the composite plate which contains in its second layer a damping material possessing large logarithmic decrement. Aero-hydrodynamical interaction between plate and external acoustic environment is defined by three-dimensional wave equations, whilst mechanical behavior of double-layered plate is examined with a model based on classical Kirchhoff-Love's hypothesis. Exact analytical solutions were given for plates with simply supported edges. Based on given solutions we find parameters for second layer which lead to substantially damping of plate vibrations in the case of acoustic loading at resonant modes.

MSC:

[74J15](#) Surface waves in solid mechanics
[74K20](#) Plates
[74E30](#) Composite and mixture properties

Cited in 4 Documents

Keywords:

double-layered plate; acoustoelasticity; internal damping; logarithmic decrement; wave equation; acoustic wave; analytical solution; resonance; vibration damping

Full Text: [DOI](#)

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