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PROPAGATION OF LOVE WAVES IN PRESTRESSED ORTHOTROPIC LAYER COATED OVER A PRESTRESSED ORTHOTROPIC SEMI-INFINITE SPACE WITH IRREGULAR INTERFACE

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Abstract: This paper contains the dispersion equation of Love waves propagating in an initially-stressed orthotropic layer coated over an initially-stressed orthotropic semi-infinite space. Rectangular irregularity of height H and width b at the interface is considered in this paper. The surface of the layer is supposed to be traction-free. To find the numerical results, semi-infinite space is assumed to be of topaz material and the layer is assumed to be of olivine material. Based on the dispersion equation, numerical values of dimensionless velocity against dimensionless layer thickness are calculated. The comparison of the velocity curves for different values of initial stress has been examined graphically. Graphs for one and two modes of velocity are drawn. The effect of irregularity on the velocity of Love waves has been shown graphically. It is shown that the second mode of velocity shows more variation than the first mode of velocity. MATLAB is used to plot graphs. It is demonstrated that initial-stress and irregular interfaces significantly affect the velocity of Love waves.

Keywords and Phrases: Orthotropic, irregularity, initial stress, Love waves, velocity.

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