Shear Elastic Waves in Disordered Anisotropic Multi-Layered Periodic Structure

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Abstract : Based on the constitutive model and anti-plane equations of anisotropic elastic body of monoclinic symmetry we consider the problem of shear wave propagation in multi-layered disordered composite structure with point defect. Using transfer matrix method the analytic expression is obtained providing solutions of shear Floquet wave propagation in periodic disordered anisotropic structure. The usefulness of the obtained analytical expression was discussed also in reflection and refraction problems from multi-layered reflector as well as in vibration problem of multi-layered waveguides. Numerical results are presented highlighting the effects arising in disordered periodic structure due to defects of multi-layered structure.
Keywords : shear elastic waves, monoclinic anisotropic media, periodic structure, disordered multilayer laminae, multi-layered waveguide