

Article Abstract

Title:	Three dimensional vibration analysis of an infinite poroelastic plate immersed in an inviscid elastic fluid
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Abstract:	Three dimensional wave propagation in poroelastic plate immersed in an inviscid elastic fluid is studied employing Biot's theory. Frequency equations are derived for pervious and impervious surfaces. Frequency equation each for a pervious and impervious surface is obtained for poroelastic plate in contact with an inviscid elastic fluid and poroelastic plate in vacuum as a particular case and also when the wavenumbers vanish. Phase velocity as a function of propagation constant is computed for pervious and impervious surfaces in each case, i.e., poroelastic plate immersed in an acoustic medium, poroelastic plate in contact with an inviscid elastic fluid and poroelastic plate in vacuum in absence of dissipation. It is observed that the phase velocity of pervious and impervious surfaces is same for water saturated sandstone while it is not for kerosene saturated sandstone in each of these three cases. Results of previous investigations are obtained as a particular case of the present study.
Keywords:	Biot's theory, poroelastic plate, pervious surface, impervious surface, propagation constant, phase velocity, elastic fluid.