عنوان مقاله:

Method of Green’s Function for Characterization of SH Waves in Porous-Piezo Composite Structure with a Point Source

محل انتشار:

فصلنامه مکانیک جامد, دوره 12, شماره 1 (سال: 1399)

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خلاصه مقاله:

An approach of Green’s function is adopted to solve the inhomogeneous linear differential equations representing wave equations in piezo-composite materials. In particular, transference of horizontally polarised shear (SH) waves is considered in bedded structure comprising of porous-piezo electric layer lying over a heterogeneous half-space. Propagation of SH-waves is considered to be influenced by point source, situated in the heterogeneous substrate. A closed form analytical solution is obtained to establish the dispersion relation. Remarkable influence of different parameters (like elastic constant, piezoelectric constant, heterogeneity parameter, initial stress and layers thickness) on the phase and group velocity are shown graphically. Moreover, a special case of present study is shown by replacing the porous piezoelectric material with piezoelectric material. Some numerical examples are illustrated by taking the material constants of Lead Zirconate Titanate (PZT-1, PZT-5H and PZT-7) for the porous piezoelectric layer where the phase velocity of SH waves is high rather than that of piezoelectric layer.

کلمات کلیدی:

Point source, Porous piezoelectric material, Green’s function, SH-waves