

عنوان مقاله:

Dispersion of SH-Wave in a Heterogeneous Orthotropic Layer Sandwiched Between an Inhomogeneous Semi-Infinite Medium and a Heterogeneous Elastic Half-Space

محل انتشار:

فصلنامه مکانیک جامد، دوره 13، شماره 4 (سال: 1400)

تعداد صفحات اصل مقاله: 14

نویسندگان:

R.M Prasad - *Department of Mathematics, S. N. Sinha College, Tekari Magadh University, Bodh-Gaya, India*

S Kundu - *Department of Mathematics & Computing, Indian Institute of Technology (Indian School of Mines), Dhanbad, India*

خلاصه مقاله:

The aim of this paper is to investigate the existence of the dispersion of SH-wave in a heterogeneous orthotropic layer lying over a heterogeneous elastic half-space and underlying an inhomogeneous semi-infinite medium. Hyperbolic variation in upper semi-infinite associated with directional rigidities and density has been considered while linear variation in the intermediate layer associated with initial stress, density, shear moduli and lower half-space associated with rigidity and density has been considered. The dispersion equation of SH-wave has been obtained in a closed form by using variable separation method. The effects of inhomogeneities of the assumed media are illustrated by figures using MATLAB programming. The Earth's composition is heterogeneous that incorporates extremely hard layers. The propagation of SH-wave across crustal layer of the Earth very much depends upon heterogeneity and orthotropic properties. In fact, the observation reveals that the phase velocity of SH-wave is directly proportionate to inhomogeneity parameter, orthotropic parameter and heterogeneity parameter. That means as inhomogeneity parameter and heterogeneity orthotropic parameter increases, the phase velocity of SH-wave increases proportionately. Moreover, the obtained dispersion equation of SH-wave coincides with the classical result of Love wave as initial stress, inhomogeneities, and the upper semi-infinite medium is neglected. This analysis may be helpful to expound the nature of the dispersion of seismic waves in elastic media.

کلمات کلیدی:

Inhomogeneity, Orthotropic medium, Heterogeneous half-space, SH-wave

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1309863>

