

Explicit secular equations of Stoneley waves in a non-homogeneous orthotropic elastic medium under the influence of gravity

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Abstract: The problem of Stoneley waves in a non-homogeneous orthotropic elastic medium under the influence of gravity was studied recently by Abd-Alla and Ahmed [A.M. Abd-Alla, S.M. Ahmed, Stoneley waves and Rayleigh waves in a non-homogeneous orthotropic elastic medium under the influence of gravity, Appl. Math. Comput. 135 (2003) 187-200], who derived the secular equation of the wave in the implicit form. In this paper, by using an appropriate representation of the solution, we obtain the secular equation of the wave in the explicit form. Moreover, considering its special cases, we derive explicit secular equations for a number of investigations of Stoneley waves under the influence of gravity, for which only the implicit dispersion equations were previously obtained. ?? 2009 Elsevier Inc. All rights reserved.

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