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PLANE STRAIN DEFORMATION WITH REPEATED CHARACTERISTICS VALUES

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Abstract: The objective of the present study is to derive the analytical expression for deformation field in an orthotropic elastic medium by using repeated characteristics values as a result of inclined line-load . For the procedure the method of equal characteristics value and Fourier transformation is used. To represent graphically, the elastic constants for two distinct elastic materials have been considered. To see the effect of inclination, the variations in displacements and stresses for different values of inclination i.e. at $\delta = 0^0$, $30^0, 60^0, 90^0$ have been depicted graphically. It is found that normal and tangential loading influence the displacement and stresses significantly for distinct material.

Keywords and Phrases: Characteristics values, Inclined line-load, Orthotropic elastic medium, Tangential line-load, Vertical line-load.

2020 Mathematics Subject Classification: 74-10, 86A15.

1. Introduction

Although it is almost impossible to predict an Earthquake, but with the study of seismology and identifying rock properties, seismologists can find out which is the most affected zone of earthquakes. In theoretical aspects, mathematical modeling plays an important role in order to understand Seismology and related phenomena. With the help of an appropriate model one can analyze the effect of loading, irregularities etc on deformation in distinct media which can proved to be helpful