

## A Closed-Form Solution and Comparison for a One-Dimensional Orthorhombic Quasicrystal and Crystal Plate

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**Abstract :** The work includes derivation of the exact-closed form solution for simply supported quasicrystal and crystal plates by using propagator matrix method under surface loading and free vibration. As a numerical example a quasicrystal and a crystal plate are considered, and after investigation, the variation of displacement and stress fields along the thickness of these two plates are presented. Further, it includes analyzing the displacement and stress fields for two plates having two different stacking arrangement, i.e., QuasiCrystal/Crystal/QuasiCrystal and Crystal/QuasiCrystal/Crystal and comparing their results. This will not only tell us the change in the behavior of displacement and stress fields in two different materials but also how these get changed after trying their different combinations. For the free vibration case, Crystal and Quasicrystal plates along with their different stacking arrangements are considered, and displacements are plotted in all directions for different Mode Shapes.

**Keywords :** free vibration, multilayered plates, surface loading, quasicrystals

**Conference Title :** ICSRD 2020 : International Conference on Scientific Research and Development

**Conference Location :** Chicago, United States

**Conference Dates :** December 12-13, 2020