

Finding the Elastic Field in an Arbitrary Anisotropic Media by Implementing Accurate Generalized Gaussian Quadrature Solution

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Abstract : In the current study, the elastic field in an anisotropic elastic media is determined by implementing a general semi-analytical method. In this specific methodology, the displacement field is computed as a sum of finite functions with unknown coefficients. These aforementioned functions satisfy exactly both the homogeneous and inhomogeneous boundary conditions in the proposed media. It is worth mentioning that the unknown coefficients are determined by implementing the principle of minimum potential energy. The numerical integration is implemented by employing the Generalized Gaussian Quadrature solution. Furthermore, with the aid of the calculated unknown coefficients, the displacement field, as well as the other parameters of the elastic field, are obtainable as well. Finally, the comparison of the previous analytical method with the current semi-analytical method proposes the efficacy of the present methodology.

Keywords : anisotropic elastic media, semi-analytical method, elastic field, generalized gaussian quadrature solution

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