

عنوان مقاله:

Study on Non-Linear Bending Analysis of Functionally Graded (FG) Cantilever Euler-Bernoulli Beam Subjected to Static Loading Using Generalized Differential Quadrature (GDQ) Method

محل انتشار:

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خلاصه مقاله:

Non-linear bending analysis of functionally graded (FG) cantilever Euler-Bernoulli beam subjected to static loading has been investigated by using generalized differential quadrature (GDQ) method. The non-linear formulations are based on first-order shear deformation theory (FSDT) and the large deflection Von-Kármán type non-linearity. Equilibrium equations are obtained by using the principle of minimum total potential energy. Furthermore, the applicability of GDQ technique to the deflection, displacement, and stress along the middle plane of the beam due to a point load is also demonstrated. Numerical results are plotted to illustrate the effects of volume fraction index, boundary conditions, mechanical properties as well as non-dimensionalized parameters on the beam

کلمات کلیدی:

Functionally Graded Material (FGM), Von-Kármán Theory, Generalized Differential Quadrature (GDQ), Deformation, Beam, Deflection

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