عنوان مقاله:

Buckling Analysis of Rectangular Functionally Graded Plates with an Elliptic Hole Under Thermal Loads

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خلاصه مقاله:

This paper presents thermal buckling analysis of rectangular functionally graded plates (FG plates) with an eccentrically located elliptic cutout. The plate governing equations derived by the first order shear deformation theory (FSDT) and finite element formulation is developed to analyze the plate behavior subjected to a uniform temperature rise across plate thickness. It is assumed that the non-homogenous material properties vary through the plate thickness according to a power function. The developed finite element (FE) code with an extended mesh pattern is written in MATLAB software. The effects of aspect ratio of the plate, ellipse radii ratio, position and orientation of the cutout, boundary conditions (BCs) and volume fraction exponent are investigated in details. The results of present code are compared with those available in the literature and some useful design-orientated conclusions are achieved.

کلمات کلیدی:

FG plates, Thermal buckling, Finite Element Analysis, Elliptic hole

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