

عنوان مقاله:

Free Axisymmetric Bending Vibration Analysis of two Directional FGM Circular Nano-plate on the Elastic Foundation

محل انتشار:

فصلنامه مکانیک جامد، دوره 10، شماره 4 (سال: 1397)

تعداد صفحات اصل مقاله: 20

نویسندگان:

M Zarei - *Department of Mechanical Engineering, Tarbiat Modares University (TMU), Tehran, Iran*

Gh Rahimi - *Department of Mechanical Engineering, Tarbiat Modares University (TMU), Tehran, Iran*

خلاصه مقاله:

In the following paper, free vibration analysis of two directional FGM circular nano-plate on the elastic medium is investigated. The elastic modulus of plate varies in both radial and thickness directions. Eringen's theory was employed to the analysis of circular nano-plate with variation in material properties. Simultaneous variations of the material properties in the radial and transverse directions are described by a general function. Ritz functions were utilized to obtain the frequency equations for simply supported and clamped boundary. Differential transform method also used to develop a semi-analytical solution the size-dependent natural frequencies of non-homogenous nano-plates. Both methods reported good results. The validity of solutions was performed by comparing present results with themselves and those of the literature for both classical plate and nano-plate. Effect of non-homogeneity on the nonlocal parameter, geometries, boundary conditions and elastic foundation parameters is examined the paper treats some interesting problems, for the first time

کلمات کلیدی:

Eringen's theory, Free vibration, FGM nano-plate, Ritz method, Differential transform method

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/999282>

