

عنوان مقاله:

Buckling and Vibration Analysis of Tapered Circular Nano Plate

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خلاصه مقاله:

this paper, buckling and free vibration analysis of a circular tapered nanoplate subjected to in-plane forces were studied. The linear variation of the plate thickness was considered in radial direction. Nonlocal elasticity theory was employed to capture size-dependent effects. The Raleigh-Ritz method and differential transform method were utilized to obtain the frequency equations for simply supported and clamped boundary conditions. To verify the accuracy of the Ritz method, the differential transform method (DTM) was also used to drive the size-dependent natural frequencies of circular nanoplates. Both methods reported good results. The validity of solutions was performed by comparing the present results with those of the literature for both classical plate and nanoplate. The effects of nonlocal parameter, mode number, and taper parameter on the natural frequency were investigated. The results showed that increasing the taper parameter causes increasing of buckling load and natural frequencies, and its effects on the clamped boundary condition is more than the simply support

کلمات کلیدی:

Nonlocal theory, Axisymmetric vibration analysis, Variable thickness plate, Ritz method, Differential transform method

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