عنوان مقاله:

Comparison Between Three Different Analytical Methods for Nonlinear Oscillator Equation Arising in Double Sided Driven Clamped Microbeam

محل انتشار:

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خلاصه مقاله:

In this paper, three different analytical methods are applied to the strongly nonlinear oscillator with high nonlinearity. Periodic solutions are analytically verified and consequently the relationship between the natural frequency and the initial amplitude is obtained in an analytical form. The obtained results are compared with each other and exact solution. These methods are Energy Balance Method, Hamiltonian Approach and Global Error Minimization Method. Accuracy and validity of the proposed techniques are then verified by comparing the numerical results obtained based on these methods and exact integration method. In contrast with the traditional methods, the proposed methods do not require any small parameter in the equation

کلمات کلیدی:

nonlinear oscillation, analytical methods, natural frequency, periodic solution