عنوان مقاله:

Vibration analysis of functionally graded beams resting on elastic foundation using first order shear deformation theory

محل انتشار:

همایش یافته های نوین در هوافضا و علوم وابسته (سال: 1394)

تعداد صفحات اصل مقاله: 9

نویسندگان:

D Sirati - *Department of Mechanical Engineering, Islamic Azad University, Karaj Branch, Karaj, Iran*

H Azari - *Department of Mechanical Engineering, Islamic Azad University, Takestan Branch, Takestan,*

M Shamohammadi - *Department of Mechanical Engineering, Islamic Azad University, Karaj Branch, Karaj, Iran*

A Damercheloo - *Department of Mechanical Engineering, Islamic Azad University, Karaj Branch, Karaj, Iran*

خلاصه مقاله:

In this paper, free vibration analysis of functionally graded(FG) beams resting on Winkler foundation are investigated using first order shear deformation theory and. Material properties of the beam change in the thickness direction according to power-law distributions. The governing equations and the related boundary conditions are derived using the principal of the minimum total potential energy. The Navier-type solution is used for simply-supported boundary conditions, and exact formulas are proposed for the fundamental frequencies. In order to establish the accuracy of the present formulation and results, t he n atural f requencies are obtained, a nd c ompared w ith t he p ublished r esults available in the literature. Good agreement is observed. Numerical results are presented to investigate the influences the different material distributions and foundation stiffness on the free vibration behavior of FG beams.

کلمات کلیدی:
Free Vibration, FG, FSDT, Winkler

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/441335