

عنوان مقاله:

Physical Nonlinear Analysis of a Beam Under Moving Harmonic Load

محل انتشار:

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خلاصه مقاله:

A prismatic beam made of a behaviorally nonlinear material is analyzed under a harmonic load moving with a known velocity. The vibration equation of motion is derived using Hamilton principle and Euler-Lagrange Equation. The amplitude of vibration, circular frequency, bending moment, stress and deflection of the beam can be calculated by the presented solution. Considering the response of the beam, in the sense of its resonance, it is found that there is no critical velocity when the behavior of the beam material is assumed to be physically nonlinear.

کلمات کلیدی:

Moving load, Hamilton Principle, Physically Nonlinear, Euler, Lagrange Equation, Duffing Equation, Critical velocity, Resonance

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