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عنوان مقاله:

Dynamic Analysis of Non-uniform Cross-Section Beam under Moving Mass Using Finite Element Method

محل انتشار:

چهاردهمین کنفرانس سالانه مهندسی مکانیک (سال: 1385)

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خلاصه مقاله:

The analysis of a variable cross-section beam subjected to a moving concentrated force and mass is investigated. Finite element method with cubic Hermitian interpolation functions is used to model the structure based on Euler-Bernoulli beam and Wilson-Θ direct integration method is implemented to solve time dependent equations. Effects of cross-section area variation, boundary conditions, and moving mass inertia on the deflection, natural frequencies and longitudinal stresses of beam are investigated. Results indicates using a beam of parabolically varying thickness with constant mass can decrease maximum deflection and stresses along the beam while increasing natural frequencies of the beam. Effect of moving mass inertia at high velocity of moving load is also investigated and findings indicate .effect of inertia is significant at high velocity

کلمات کلیدی:

moving mass – non-uniform cross-section beam - longitudinal stress - finite element method

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