

Transverse Vibration of Elastic Beam Resting on Variable Elastic Foundation Subjected to moving Load

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Abstract : These present-day all areas of transport have experienced large advances characterized by increases in the speeds and weight of vehicles. As a result, this paper considered the Transverse Vibration of an Elastic Beam Resting on a Variable Elastic Foundation Subjected to a moving Load. The beam is presumed to be uniformly distributed and has simple support at both ends. The moving distributed moving mass is assumed to move with constant velocity. The governing equations, which are fourth-order partial differential equations, were reduced to second-order partial differential equations using an analytical method in terms of series solution and solved by a numerical method using mathematical software (Maple). Results show that an increase in the values of beam parameters, moving Mass M , and k -stiffness K , significantly reduces the deflection profile of the vibrating beam. In the results, it was equally found that moving mass is greater than moving force.

Keywords : elastic beam, moving load, response of structure, variable elastic foundation

Conference Title : ICAMMP 2023 : International Conference on Applied Mathematics and Mathematical Physics

Conference Location : Madrid, Spain

Conference Dates : March 20-21, 2023