

Mode Shapes of Transverse Vibrations of Rod Protected from Vibrations in Kinematic Excitations

- [Authors](#)
 - [Authors and affiliations](#)
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- Mirziyod Mirsaidov
 - Olimjon Dusmatov
 - Muradjon Khodjabekov

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Abstract

This work is devoted to the mode shapes of transverse vibrations of the rod, which is protected from vibrations under the influence of kinematic excitations. One of the current problems is the general form of mode shapes of vibrations and analytical expression of frequency equations, taking into account the dissipative characteristics of vibration-protected rods. A liquid section dynamic absorber taken as a vibration protective object in the study. The Pisarenko-Boginich model of the hysteresis type expresses the dissipative properties of the rod material. The frequency equations and mode shapes of vibrations of the system under consideration are generally obtained analytically depending on the system parameters. From the frequency equation, it is shown that which parameters, in addition to the mechanical characteristics of the rod, depend on the resonant frequency. Effects of the liquid section dynamic absorber have been shown to affect the mode shapes function of an elastic dissipative rod of the hysteresis type.

Keywords

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