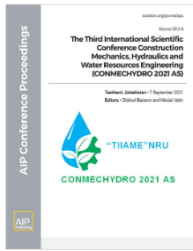


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RESEARCH ARTICLE | MARCH 15 2023

Dynamics of the rod protected from vibration under kinematic excitations

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Reduction of low frequency nonlinear transverse vibrations of the system with the hysteresis type elastic dissipative characteristics rod protected from vibrations, the study of the dynamics concerning the parameters of the system and numerical analysis is an urgent problem. In this work, a method of analytical evaluation of the dynamics of nonlinear transverse vibrations of the system of hysteresis type elastic dissipative characteristic rod in conjunction with a liquid section dynamic absorber under the influence of kinematic excitations was developed. Analytical expressions of the transfer function and amplitude-frequency characteristics were identified, which were numerically analyzed at different values of the system parameters, and conclusions were obtained. The efficiency of the liquid section dynamic absorber was evaluated against stiffness and damping elements, and recommendations for selecting these parameters were developed. At low-frequency vibrations, the value of the amplitude reaching the minimum relative to the frequency was determined, and the effect of reducing the harmful vibrations of the liquid section dynamic absorber was evaluated.

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