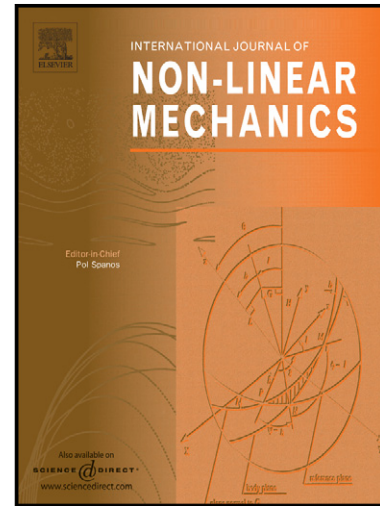


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On some performance characteristics of base excited vibration isolation systems with a purely nonlinear restoring force

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ABSTRACT: Base excited vibration isolation systems with a purely nonlinear restoring force and a velocity n th power damper are considered. The restoring force has a single-term power form with the exponent that can be any non-negative real number. Approximations for the steady-state response at the frequency of excitation are obtained by using the Jacobi elliptic function with a changeable elliptic parameter and by applying an elliptic averaging method. The relative and absolute displacement transmissibility of this system are analysed. These performance characteristics are expressed in terms of the damping parameters, but they are also determined for an arbitrary non-negative real power of geometric nonlinearity, which represent new and so far unknown results. Some examples illustrating the effect of the system parameters on these performance characteristics are also presented.

KEYWORDS: Base excited system; Power-form restoring force; Velocity n th power damper; Transmissibility; Jumps.

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