

Analysis of Vibrational Resonance in Position Dependent Mass System Under an Amplitude Modulated Excitation

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Abstract

The phenomenon of vibrational resonance (VR) in a classical position-dependent mass (PDM) system under the influence of an amplitude modulated (AM) force with ' $\Omega \gg \omega$ ' is numerically studied. The system provides an interesting scenario where PDM function makes a significant contribution to the occurrence of VR. With the results given by this paper one can weaken or enhance the weak low-frequency force in the PDM system by controlling the PDM parameters such as mass amplitude m_0 and mass spatial nonlinearity λ . The basic dynamical behaviours such as VR, period-doubling, reverse period-doubling, chaos, hysteresis and jump phenomenon have been investigated through bifurcation diagram, phase portrait and response amplitude

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