عنوان مقاله:

Modeling and simulation of nonlinear energy harvesting as a bimodal Duffing-type oscillator using piezoelectric materials

محل انتشار:

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خلاصه مقاله:

A semi analytical method is derived to illustrate the effect of energy harvesting on nonlinear bimodal Duffing-type oscillator. Energy harvesting of base excitation vibration is investigated. Cantilever beam and piezoelectric elements are modelled as Euler-Bernoulli beam using Assumed Mode method with considering higher deformations that leads to nonlinear terms. Complex Averaging method is applied to the derived equations for unimodal and bimodal cases. Time domain response from Complex Averaging method in steady state is compared with numerical solution. Then Continuation method is used to find changes of limit points versus change of base excitation frequency. Frequency response of the unimodal and bimodal cases are given in different base excitation, and results of unimodal and bimodal cases are compared

کلمات کلیدی:

Nonlinear energy harvesting , Duffing-type oscillator , Complex Averaging method , Continuation method

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