Vibrational Resonance in Two - Coupled Duffing - Van der Pol Oscillators
Driven by Frequency Modulated Signal

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Abstract

We study the Vibrational Resonance (VR) phenomenon in two coupled Duffing-van der Pol (DVP) oscillators under the influence of frequency modulated signal. The dynamics of system is studied both narrow band and wide band frequency modulated signals for the cases four types of potentials, namely, single-well, double-well, four-well and four-hump potentials. We show the occurrence of hysteresis and vibrational phenomena for specific set of values of the parameters of the system. Vibrational resonance and hysteresis are characterized using the response amplitude and bifurcation diagram.

Keywords: Two coupled DVP oscillators, Vibrational resonance, Hysteresis, Response amplitude.

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