

## Energy pumping into mechanistic chain oscillator model

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*Abstract:* The chain oscillator containing only linear and cubic spring elements is a conservative system. In this work, we investigate the energy pumping mechanism of negative stiffness elements in the chain oscillator. In this model, the size of the masses connected by the springs is determined by the power law, the one biggest mass is connected to smaller masses, and on the last level, there is a damper to dissipate energy. Additionally, on the first level, there is a negative stiffness connected to the biggest mass. We investigate the qualitative behaviour and the bifurcation of the introduced system by varying the damping and the amount of energy pumping, as well. Also, the effect of the harmonic excitation will be investigated and the dynamics of the system will be illustrated by using Poincaré sections.

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