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Floquet breathers in a time-modulated nonlinear lattice

Content

Floquet discrete breathers are localized periodic solutions that may appear in nonlinear lattices with periodic modulation in space and time.

Based in a previous experimental device constructed with cantilevers and with additive time-periodic excitation, we have designed a system with parametric driving that can be modulated in space and time.

For that system, we deduce theoretically the changes brought about by the modulation, first in the phonon band and then on breather properties as existence, stability and the numerical methods to obtain them.

We have found a large variety of Floquet breathers with equal period of the modulating one, multiplied or divided by an integer and commensurate ones.

The results are applicable to a variety of systems and are not limited to the specific model.

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