

## عنوان مقاله:

A SMA-based Wave Propagation Control Method for 2D Nonlinear Phononic Lattices

## محل انتشار:

سی و یکمین همایش سالانه بین المللی مهندسی مکانیک ایران و نهمین همایش صنعت نیروگاهی ایران (سال: 1402)

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## خلاصه مقاله:

The functionalities of shape memory alloys (SMAs) structures in actively controlling the mechanical behavior of structures have recently been extended to periodic structures. However, the application of SMAs to tune the wave attenuation and dynamic properties of such structures has been limited to linear one-dimensional chains. Therefore, we aim to present a SMA-based active control scheme for the wave propagation in weakly nonlinear 2D lattices. The Lindstedt-Poincare method is utilized in conjunction with the Bloch's theorem to obtain the analytical dispersion relation for a weakly nonlinear 2D lattice. Also a helical spring model based on the well-known Brinson model has been used to model the behavior of the auxiliary SMA springs. The results of the current study can be an initial step in designing active planar lattices with tunable wave attenuation performance.

## کلمات کلیدی:

.phononic crystal, wave propagation, shape memory alloys, perturbation methods

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1668876>

