عنوان مقاله:

Presentation of a Novel Method in the realm of Non-classical Continuum Mechanics Under the Vibration of Nano-scaled Structures

محل انتشار:

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خلاصه مقاله:

The following paper contains a presentation of a novel method to derive the lattice constitutive equation based on lattice basics. The lattice is assumed to be made of point masses and springs. In this method, a self-containing differential equation is presented, in which lattice parameter derivation, despite previous non-classical theories, is no longer difficult. The equation represents the displace-ment field of the lattice which is derived using the Taylor series. The order of the equation is deter-mined by the number of terms in the Taylor series. Also, to compare the results, dispersion relation for a flexural beam in Eringen's non-local theory, Lattice model and the new method has been derived then the effect of lattice parameter- the distance between the point masses- on the dispersion curve has been investigated. Finally, the first three frequencies for the mentioned beam in these three meth-ods in different boundary .conditions have been derived and the error in each mode has been calcu-lated

کلمات کلیدی:

.discrete dynamics; Lattice parameter; non-classical continuum; dispersion rela-tion