

ΣΕΜΙΝΑΡΙΟ ΚΕΝΤΡΟΥ ΚΒΑΝΤΙΚΗΣ ΠΟΛΥΠΛΟΚΟΤΗΤΑΣ &
NANOTEΧΝΟΛΟΓΙΑΣ/ CCQCN SEMINAR

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11:00-12:00

3rd Floor Seminar Room

**Stability and Bifurcation of Coherent Structures in Nonlinear
Lattices**

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Abstract

In this talk, we present our recent result related with stability and bifurcation of discrete breathers in nonlinear lattices. We study the existence and stability of multibreathers in Klein-Gordon chains with long range interactions. We provide a general framework where such long range effects can be taken into consideration for arbitrarily varying (as a function of the node distance) linear couplings between arbitrary sets of neighbors in the chain. Next, we obtain a general criterion for spectral stability of multi-site breathers for a small coupling constant for a nonlinear metamaterial lattice. We show how this criterion differs from the one derived in the Klein-Gordon lattice. The existence and uniqueness results of periodic and asymptotic travelling waves of the nonlinear metamaterial lattice are presented. Employing Melnikov theory for an advance-delay functional differential equation. The existence and the stability of periodic and asymptotic waves are also computed and discussed numerically.

