

Discrete Breathers in Lattices of Coupled Oscillators

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Abstract: Discrete breathers are generic solutions for the dynamics of nonlinearly coupled oscillators. We show that discrete breathers can be observed in low-dimensional and high-dimensional lattices by exploring the sinusoidally coupled pendulum. Loss of stability of the breather solution is studied. We also find the existence of discrete breather in lattices with parameter mismatches. Breather phase synchronization is exhibited for the coupled chaotic oscillators.

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Key words: discrete breather, rotator, discrete sine-Gordon chain, phase synchronization

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