

Universal spreading of wave packets in disordered nonlinear systems

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Abstract:

I will analyze mechanisms and regimes of wave packet spreading in nonlinear disordered media. Wave packets can spread subdiffusively in two regimes of strong and weak chaos [1,2,3]. I will discuss resonance probabilities, nonlinear diffusion equations, and a dynamical crossover from strong to weak chaos. The crossover is controlled by the ratio of nonlinear frequency shifts and the average eigenvalue spacing of eigenstates of the linear equations within one localization volume. I consider generalized models in higher lattice dimensions [4] and obtain critical values for the nonlinearity power, the dimension, and norm density, which influence possible dynamical outcomes in a qualitative way.

References:

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