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Arnold diffusion in the discrete nonlinear Schroedinger equation

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Abstract

We study the discrete nonlinear Schroedinger equation with seven oscillators and a small single on-site defect. We consider the numerical continuation of a family of relative equilibria with respect to the defect parameter and the period of the solutions. Close to a multiple branching point, we consider a linearly stable equilibrium as the initial condition of this quasi-integrable Hamiltonian. Resonant regular motion and Arnold diffusion arises as we change the magnitude of the defect parameter. In the latter, we are able to follow the evolution of different stochastic layers with a suitable embedding of the dynamics along a multiple resonance.

Joint work with Eusebius Doedel (*Concordia University*).