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Wavepacket dynamics in a family of nonlinear Fibonacci lattices

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— We examine the dynamics of a quantum particle in a variety of one-dimensional Fibonacci lattices (which are shifted from each other) in the presence of interaction. To describe the nonlinear interactions we employ the discrete nonlinear Schrdinger (DNLS) equation. Using a single-site localized state in the lattice as our initial condition, we evolve the wavepacket numerically using DNLS equation. We compute the root-mean-square width of the wavepacket as it evolves in time and show how the "global location" of initial wavepacket affects the dynamics. We compare and contrast our results with earlier studies of related but distinct models.

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