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Dynamic localization and transport of a quantum particle in an optical lattice. PANAGIOTIS MANIADIS, Los Alamos National Laboratory, Los Alamos NM, GEORGE P. TSIRONIS, Department of Physics and FORTH, University of Crete, Greece — We study the localization and the transport of a quantum particle in an optical lattice under the influence of an AC electric field. For the description of the particle we use a generalized Discrete Nonlinear Schrödinger equation with local and nonlocal nonlinearities. Depending on the parameters of the system, and the external driving field, different behavior is observed (hopping, diffusion, dynamic localization). We explore numerically the behavior of the particle for different values of the external field and the internal nonlinearity parameters, and we compare our results with experimental observations.

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