Exact solutions of a two-dimensional cubic–quintic discrete nonlinear Schrödinger equation

We show that a two-dimensional generalized cubic–quintic Ablowitz–Ladik lattice admits periodic solutions that can be expressed in analytical form. The framework for the stability analysis of these solutions is developed and applied to reveal the intricate stability behavior of this nonlinear system. We examine the stability of these solutions and find that staggering along one of the two dimensions is important for stability.

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