SOLITONIC STATES AND NONLINEAR SCHRÖDINGER EQUATION IN TWO AND MORE DIMENSIONS

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S u m m a r y

In this talk, I present and discuss some results of [1—4] and [5]. In these papers we have shown that, for a suitable range of parameters, the two-dimensional discrete equations describing a quasiparticle interacting with the displacements of a lattice of atoms possess solitonic solutions. We also show that, in the continuum limit, the effective equation for the quasiparticle reduces to the nonlinear and, in general, nonlocal Schrödinger equation. We describe the conditions when this equation also possesses solitonic solutions. We discuss some further generalizations of this problem.