Mathematical Physics

Families of stable and metastable solitons in coupled system of scalar fields

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In this paper, we obtain stable and metastable soliton solutions of a coupled system of two real scalar fields with five five discrete points of vacua. These solutions have definite topological charges and rest energies and show classical dynamical stability. From a quantum point of view, however, the V-type solutions are expected to be unstable and decay to D-type solutions. The induced decay of a V-type soliton into two D-type ones is calculated numerically, and shown to be chiral, in the sense that the decay products do not respect left-right symmetry.

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