Nonlinear Sciences > Pattern Formation and Solitons

Snaking and isolas of localised states in bistable discrete lattices

Chris Taylor, Jonathan H.P. Dawes

(Submitted on 1 Nov 2010)

We consider localised states in a discrete bistable Allen-Cahn equation. This model equation combines bistability and local cell-to-cell coupling in the simplest possible way. The existence of stable localised states is made possible by pinning to the underlying lattice; they do not exist in the equivalent continuum equation. In particular we address the existence of 'isolas': closed curves of solutions in the bifurcation diagram. Isolas appear for some non-periodic boundary conditions in one spatial dimension but seem to appear generically in two dimensions. We point out how features of the bifurcation diagram in 1D help to explain some (unintuitive) features of the bifurcation diagram in 2D.

Submission history

From: Jonathan Dawes [view email]
[v1] Mon, 1 Nov 2010 12:46:05 GMT (1264kb,D)

Which authors of this paper are endorsers?

Download:

- PDF
- Other formats

Current browse context:
nlin.PS
< prev | **next >**
new | recent | 1011

Change to browse by:

math
   math.DS
nlin

References & Citations

- NASA ADS

Bookmark(what is this?)