

Defect-mediated snaking: A new growth mechanism for localized structures

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Abstract:

Stationary spatially localized patterns in parametrically driven systems are studied, focusing on the 2 : 1 and 1 : 1 resonance tongues as described by the forced complex Ginzburg-Landau equation. Homoclinic snaking is identified in both cases and the nature of the growth of the localized structures along the snaking branches is described. The structures grow from a central defect that inserts new rolls on either side, while pushing existing rolls outwards. This growth mechanism differs fundamentally from that found in other systems exhibiting homoclinic snaking in which new rolls are added at the fronts that connect the structure to the background homogeneous state.

References:

1. Y.-P. Ma, J. Burke, and E. Knobloch, submitted to *Physica D* (2010).