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Dynamical phases in coupled q-deformed nonlinear maps

Sumit S. Pakhare ; Prashant M. Gade; D. S. Badwaik[+ Author & Article Information](#)

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Concepts of q-deformation have been extended to numbers in recent past and q-deformed nonlinear maps have been introduced in this context. Its dynamics have been extensively investigated in logistic and Gaussian maps. These systems display multistability and coexisting attractors which are usually absent in one-dimensional system. We extend this definition to tent maps. We also propose a scheme of diffusively coupled q-deformed logistic and tent maps. We study the bifurcation diagrams in these systems. A detailed study of dynamical phase portraits of these systems for various system parameters. We find that multistability found in the single map is absent in the coupled system in the thermodynamic limit. For q-deformed tent map or coupled q-deformed tent maps, there are no periodic or even band-periodic windows or coexisting attractors. In this sense, we observe robust chaos. However, for coupled q-deformed tent maps the accessible phase space area is somewhat reduced.

Topics

[Chaotic maps](#), [Phase space methods](#), [Functions and mappings](#), [Statistical thermodynamics](#)

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