

Standard Map Spatial Dynamics in a Ring-Phase Conjugated Resonator

Vicente Aboites, Mario Wilson, Kaliope Lomeli.

Appl. Math. Inf. Sci. Pp: 2823-2827

DOI: 10.12785/amis/paper

Abstract

The spatial dynamics of an optical ring phase-conjugated resonator with Standard chaos is presented. It is shown that this behavior takes place when a specific chaos-generating element is introduced on the resonator. Assuming ray optics inside the cavity with parameters p and θ for the effective distance to the optical axis and the angle to the same axis (beam's divergence) respectively. The matrix of a standard map generating device is found in terms of the specific map parameters, the state variables and the resonator parameters. One interesting feature of these kind of systems is that allow to model different bigger and uncontrollable systems, e.g. ocean dynamics, weather, social and economical systems, among others; This feature is possible thanks to the parameters control facility.