

Abstract

Projections of Periodic Functions and Mode Interactions [†]

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This work is related to the study of pattern formation in symmetric physical systems. Our purpose is to discuss a possible model, namely the projection model, to explain the appearance and evolution of regular patterns in symmetric systems of equations. Results found in Crystallography and Equivariant Bifurcation Theory are used extensively in our work. In particular, we provide a formalism of how the model of projection can be used and interpreted to understand experiments of reaction-diffusion systems. In order to do it, we study solutions of bifurcation problems with periodic boundary conditions, with periods in an $n + 1$ -dimensional lattice and their projection into n -dimensional space through integration of the last variable. We show that generically the projection of a single mode solution is a mode interaction. This can be applied to the study of black-eye patterns.

Conflicts of Interest: The authors declare no conflict of interest.



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