
YASUMASA NISHIURA, RIES, Hokkaido University, N12, W6, Kita-ku, Sapporo, Japan
Dynamics of Particle Patterns in Dissipative Systems

Particle patterns mean any spatially localized structures sustained by the balance between inflow and outflow of energy/material which arise in the form of chemical blob, discharge pattern, morphological spot, and binary convection cell. These are modeled by typically three-component reaction diffusion systems or a couple of complex GL equations with concentration field. They collide with each other, interact with defects and experience large deformation and/or basin-switching of dynamics in the form of merging, annihilation, rebound, and pinning to the defect created by heterogeneities. A new viewpoint based on a network of hidden saddles is presented to reveal the skeletal structure of those complex transient dynamics.