Mosaic Patterns in Spatially Discrete Reaction Diffusion Equations

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Abstract

In this thesis, we study the stationary patterns for spatially discrete reaction diffusion equations. The so-called *mosaic patterns* and *mosaic solutions* are characterized and constructed through a geometrical formulation on the parameter conditions. We discuss pattern formations and spatial entropy for one and two dimensional lattices via establishing pseudo basic patterns and feasible basic patterns as well as combining these basic patterns into large patterns. For the systems on finite lattices, we also consider three kinds of boundary conditions and investigate their effects on patterns formations and spatial entropy. Several numerical computations are performed to illustrate our results.