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Abstracts of Short Communications and Posters

Section:

10. Partial Differential Equations

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The Effects of Boundary Conditions on Reaction Diffusion Equations.
Reaction-diffusion models, first proposed to explain certain existing biological patterns, now form a basis for studying population interactions. Reaction diffusion systems have been shown to exhibit a variety of spatially patterned solutions when each reactant is subjected to the same boundary conditions. However, these patterns are sensitive to initial conditions, scale, geometry, and parameter values. That is, the pattern selection is not in a controlled and robust manner. We consider a system of reaction diffusion equations in one spatial dimension and show, using a new kind of linear analysis, that subjecting each reactant in a reaction-diffusion system to different boundary conditions can reduce the sensitivity of the solutions to domain growth.