

1014-35-1378

Julijana V Gjorgjieva* (jgjorgjieva@hmc.edu), 340 E. Foothill Blvd., Claremont, CA 91711.
Turing Pattern Dynamics for Spatiotemporal Models with Growth and Curvature. Preliminary report.

We study spatiotemporal patterns for reaction-diffusion systems on growing and curved domains. In particular, we are interested in the effect of growth and curvature on Turing pattern formation. Linear stability analysis is presented in the case of a growing sphere, and necessary and sufficient conditions for diffusion driven instability of the steady state and the emergence of spatial patterns are derived. By considering a typical growth function and specific two-species reaction kinetics, we characterize the so-called Turing space derived from the set of parameters that cause a spatial pattern. We explore this Turing space with the help of numerical simulations. Turing theory plays an important role in real biological pattern formation problems, such as solid tumor growth and animal coat patterns, which are investigated using numerical simulations. (Received September 28, 2005)