

MAR11-2010-005863

Abstract for an Invited Paper
for the MAR11 Meeting of
the American Physical Society

Self-organized biological patterns driven by growth and expansion

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The reaction-diffusion (RD) model, involving the diffusion of two types of morphogens (“activator” and “inhibitor”) whose interaction stimulates their own synthesis, is an established paradigm to explain the autonomous generation of space-filling patterns in biology. Starting from random initial perturbations, the RD model typically generates patterns via the development of finite-wavelength dynamical instabilities in confined geometries. In this talk, I will describe examples where elements of the RD model, together with the open, expanding geometries offered by growing biological systems, give rise to novel strategies to generate well-defined patterns in space and time.