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Pattern formation in non-local population models

Non-local advection is a key process in a range of biological systems, from cells within individuals to the movement of whole organisms. There has been increasing attention on pattern formation in non-local partial differential equations. The emergent patterns appear as local minimisers of a corresponding energy functional. Here we give approximate methods for determining the qualitative structure of local energy minimizers. These include a mixture of territory-like segregation patterns, full mixed cases, as well as narrow spike-type solutions. (joint work with V. Giunta, MA. Lewis, J. Potts)