

# SPATIO-TEMPORAL PATTERN FORMATION: EFFECT OF NONLOCAL INTERACTIONS

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## ABSTRACT

Spatio-temporal pattern formations by the reaction-diffusion equation models of interacting populations is an active area of research due to various ecological aspects. Instability of homogeneous steady-state leads to three types of patterns, stationary, periodic, chaotic. Emergent patterns imply the distribution of populations within their habitats. For reaction-diffusion models of prey-predator type interaction with prey-dependent functional response and linear death rate of predators are unable to produce Turing patterns however they are capable to produce some non-Turing patterns. This is true if we assume that the intra- and inter-species interactions are taking place in a localized manner. The scenario changes completely if we incorporate non-local interactions within the modeling approach. Main objective of the talk is to discuss the possible patterns generated by some classical reaction-diffusion models of prey-predator type interactions with non-local interaction terms. Some global bifurcation scenario will be discussed to understand the transition of patterns from one type to other due to the change in parameters.