Numerical Dynamics of Integrodifference Equations: Invariant Manifolds

Christian Pötzsche[a]

[a] Institut für Mathematik, Universität Klagenfurt (Austria)
christian.poetzsche@aau.at

Integrodifference equations are popular tools in theoretical ecology to model the spatial dispersal of populations evolving with nonoverlapping generations. Their behavior is often illustrated using numerical simulations based on various discretization methods.

In this talk, we discuss the persistence and behavior of their invariant manifolds under spatial discretization and establish convergence preserving the order of the numerical method. Our approach ranges from classical stable and unstable manifolds of autonomous equations to the full hierarchy of invariant fiber bundles for nonautonomous problems. Moreover, various ambient state spaces are discussed.