# Reaction-diffusion equations from population dynamics with nonlocal consumption of resources

Narcisa Apreutesei
Department of Mathematics
Technical University "Gh. Asachi" Iasi, Romania
E-mail: napreut@gmail.com

We present some results concerning integro-differential equations from population dynamics, where the integral term describes the nonlocal consumption of resources. Both monostable case and bistable case are considered. Fredholm property of the corresponding linear operators can help to prove the existence of travelling wave solutions. For some models, we can prove the existence of traveling waves only when the support of the integral is sufficiently small. In this case, the integro-differential operator is close to the differential one and therefore one uses the implicit function theorem, together with some perturbation method. For large support, we carry out numerical simulations. For some other models, Leray-Schauder method can be applied. This implies the construction of a topological degree for the corresponding operators and the establishment of a priori estimates for the solution. Some biological interpretations follow from this study.