An exact bifurcation diagram for a reaction–diffusion equation arising in population dynamics.

In this talk, we will discuss the exact bifurcation diagram and stability properties for a steady state model arising in population dynamics encapsulating assumptions regarding the patch/matrix interfaces, such as patch preference and movement behavior. Specifically, we analyze We analyze the positive solutions to

\[
\begin{align*}
-\Delta v &= \lambda v(1 - v); \Omega_0, \\
\frac{\partial v}{\partial \eta} + \gamma \sqrt{\lambda} v &= 0; \partial \Omega_0,
\end{align*}
\]

where \( \Omega_0 = (0, 1) \) or is a bounded domain in \( \mathbb{R}^n, n = 2, 3, \) with smooth boundary and \( |\Omega_0| = 1, \) and \( \lambda, \gamma \) are positive parameters. (Received January 28, 2019)