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*On the effects of the exterior matrix hostility and a U-shaped density dependent dispersal on a diffusive logistic growth model.*

In this talk, we will study positive solutions to a steady state model arising in population dynamics, namely,

$$\begin{cases} -\Delta u = \lambda u(1 - u); & \Omega \\ \frac{\partial u}{\partial \eta} + \gamma \sqrt{\lambda} [(A - u)^2 + \epsilon] u = 0; & \partial\Omega \end{cases}$$

where  $\lambda$  is a domain scaling parameter,  $\gamma$  is a measure of the exterior matrix ( $\Omega^c$ ) hostility, and  $A \in (0, 1)$  and  $\epsilon > 0$  are constants. The boundary condition represents a case when the dispersal at the boundary is U-shaped, that is decreasing for lower densities and increasing for higher densities. We discuss nonexistence, existence, multiplicity and uniqueness results. In particular, we discuss the occurrence of an Allee effect for certain range of  $\lambda$ . (Received September 08, 2019)