1173-92-97 **Jerome Goddard II*** (jgoddard@aum.edu), Department of Mathematics, PO Box 244023, Montgomery, AL 36124-4023, and **R. Shivaji**. *Modeling density dependent dispersal and habitat fragmentation via reaction diffusion equations.*

Dispersal is broadly defined as movement from one habitat patch to another and typically is considered to encompass three stages: 1) emigration, 2) inter-patch movement, & 3) immigration. Dispersal can have both beneficial and detrimental effects on the persistence of spatially structured systems. Recent empirical results indicate that certain organisms' emigration from a patch is dependent on density of their own species or even an interacting species—known as density dependent emigration. To date, little is known about the patch-level consequences of such dispersal strategies. In this talk, we will give a brief overview of density dependent emigration and its modeling history, discuss a framework built upon reaction diffusion equations designed to model patch-level effects of density dependent emigration, and share some recent advances. Several methods from nonlinear analysis will be employed such as time map analysis (quadrature method) and linearized stability analysis. (Received September 17, 2021)