

4:00 PM, FRIDAY, APRIL 13, 2007, BOYD 304

Speaker: **Prof. Chris Cosner**, Department of Mathematics, University of Miami, Miami, Florida

Title: **Conditional Dispersal in Ecological Models**

Reaction-diffusion equations and other traditional models in spatial ecology are based on the assumption that the way organisms disperse is not influenced by environmental conditions such as habitat quality or population density. This sort of dispersal is sometimes called unconditional. If organisms disperse in ways that depend on environmental conditions or population densities their dispersal is said to be conditional. Conditional dispersal can be incorporated into reaction-diffusion models by adding advection terms or putting density dependence into the diffusion term or boundary conditions. In some cases the presence of conditional dispersal can cause qualitative changes in the predictions of the models. In this talk I will describe a few of those cases. The models will be based on generalizations of reaction-diffusion equations. The analysis of the models will use results on the eigenvalues of elliptic partial differential operators and bifurcation theory as well as ideas from the theory of elliptic and parabolic partial differential equations.

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