1107-92-120 **Robert Stephen Cantrell**, **Chris Cosner*** (gcc@math.miami.edu), **Mark Lewis** and **Yuan Lou**. *PDE to ODE: multiple timescales in reaction-advection-diffusion models.* Preliminary report.

Traditional reaction-advection-diffusion models assume that dispersal, population dynamics, and interactions between species all operate on the same time scale. However, in many cases, the time scale of dispersal may be faster than the time scale of population dynamics. One way to address that issue is to assume a pseudo-equilibrium hypothesis for dispersal, so that the spatial distribution of a populations can be described as a fixed spatial profile determined by its dispersal strategy, which is then normalized and multiplied by the total population to yield a population density. Interactions between individuals and species then can be described in terms of spatial averages weighted by the profiles arising from their dispersal strategies. This yields ordinary differential equations that still incorporate some of the effects of the dispersal strategies that organisms use. This talk will describe the formulation of such models and some results on the evolution of dispersal in that modeling context. (Received January 08, 2015)