NIMBioS
National Institute for Mathematical and Biological Synthesis

"On Lotka-Volterra predator-prey games"

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3:30pm*, Room 403, Blount Hall, 1534 White Avenue

Many mathematical models are due for an upgrade, and the Lotka-Volterra predator-prey model is no exception. Lotka-Volterra assumes that interaction strength between predator and prey is fixed. Increasing empirical evidence, however, suggests prey (and possibly predators) change their behavior in response to the presence of the other species. For example, prey decrease their activity, or move to a refuge to avoid predators. Similarly, predator foraging behavior fluctuates with prey densities. As these behavioral effects often operate on a short time scale when compared to a population time scale, it was previously believed that behavioral effects attenuate at the population time scale. In his talk, Dr. Krivan will discuss the effects of animal behaviors on simple population dynamics described by the Lotka-Volterra model, and will show how, in some cases, predator/prey behavior can strongly influence the Lotka-Volterra population dynamics. Dr. Krivan will also discuss differential inclusions (and, equivalently, the Filippov regularization of a discontinuous differential equation) and their application to the predator/prey model.

Join us for refreshments in the NIMBioS Lobby on the 4th floor at 3:00pm