Department of Mathematics and Statistics Colloquium

Two Competitive Lotka-Volterra Equations with Nonlinear Competition

Grant Wagner

James Madison University

Abstract: We examine two modifications of the classical Lotka-Volterra equations to account for nonlinear interspecific and intraspecific interactions, by performing a complete analysis of the critical points of both equations. In the first modification, we show that it exhibits similar properties of the classical model; in the second modification, we show that it exhibits new properties not seen in the classical model.

It's Hip to be Square

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Abstract: We develop a model for tracking the behavior of two groups, conformists (squares) and anti-conformists (hipsters), as they try to reach their respective style preferences through fad adoption. Fads are linked by a weighted graph, where the edge connecting fads i and j is a measure of how compatible i and j are. We develop a system of dierential equations to generate the behavior of the fad popularity in the two groups over time.

Monday, December 2 at 3:50 pm in Roop 103

Refreshments at 3:30 pm