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Marat Akhmet* (marat@metu.edu.tr), Department of Mathematics, Middle East Technical University, Ankara. *Population dynamics and differential equations with discontinuities.*

Including discontinuities in models of population dynamics may produce very interesting, sometimes unexpected, phenomena. In our talk, we consider the Lotka-Volterra system with variable time of impulses and the logistic equation with piecewise constant arguments to illustrate the effectiveness of the application of these types of models. Hopf bifurcation is used to generate periodic solutions through impulsive control. Period-doubling cascade leading to chaos is observed for the logistic equation. We also intend to discuss the biological interpretation of the discontinuities inserted in the models, particularly the concept of anticipation, as well as to describe a new type of differential equations with discontinuities, which may be used to model dynamics. (Received September 15, 2007)