

# Complex Dynamics Group Seminar

## STABILITY AND HOPF BIFURCATION ANALYSIS OF A PREDATOR-PREY SYSTEM WITH TWO DELAYS

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### Abstract

The purpose of this talk is to mention about the stability of a ratio-dependent predator-prey system with two delays. First, a brief summary about some classes of differential equations, i.e., delay differential equations, retarded and neutral delay differential equations and Hopf bifurcation theorem will be given. Then, choosing delay parameter as a bifurcation parameter in the delayed predator-prey model, Hopf bifurcation analysis is studied. The stability of the bifurcating periodic solutions are determined by using the center manifold theorem and the normal form theory introduced by Hassard et al.

Finally, the theoretical results are supported by numerical simulations.

Undergraduate students are also welcome.

**Date:** Thursday, June 14, 2012

**Time:** 16:30

**Place:** M-203 Seminar Room, Department of Mathematics, METU