Mathematics Department, University of Manchester

SEMINAR: Sept 17th, 14.00 Room 2-08

TITLE: Mathematical Models of Population Dynamics with Delays:

Studies of virus growth and immune responses

SPEAKER: Prof Genna Bocharov, Russian Academy of Sciences, Moscow.

Abstract

Some general principles of deriving delay models from the Lotka-Sharpe-McKendrick equation for populations structured by age are presented. The approach is based upon the reduction of the fundamental equation for structured population dynamics under certain asumptions on the birth- and death rate functions. The appropriate form of models with delay equations is suggested and compared with the classical time-delay logistic equation, some realistic delay models for oscillatory dynamics of blowflies and neutral delay models of synchronized cell population growth. Application of delay models to parameter estimation of virus growth systems and studies of the dynamics of antiviral immune responses is discussed with examples for the murine LCMV system.