

1135-92-1569

Najat Ziyadi* (najat.ziyadi@morgan.edu), Morgan State University, 1700 East Cold Spring Lane, Baltimore, MD 21251. *A mathematical model of Nutrients-Phytoplankton-Oysters in a bay ecosystem with oyster filtration based on Moser equation.*

In this talk, we will introduce a parameterized mathematical model with oyster filtration that is based on the Moser equation to describe the interactions of nutrients, phytoplankton and oysters in a bay ecosystem. Using the model, we will derive verifiable conditions for the persistence and extinction of phytoplankton and oysters in the bay system. In addition, we will use sensitivity analysis and simulations to illustrate how human activities such as increased nutrients inflow can generate phytoplankton blooms via Hopf bifurcation with corresponding oscillations in the oyster biomass and nutrients level in the bay ecosystem. (Received September 23, 2017)