

1163-92-406

**Maia Martcheva\*** (maia@ufl.edu), Gainesville, FL , and **Aziz Yakubu**. *A Discrete-Continuous ODE Hybrid Model for Interaction of Two Species*. Preliminary report.

Discrete models are used for species with non-overlapping generations while continuous ODE models are best suited for species with continuous births and deaths. When species with discrete and continuous generations interact the most adequate mathematical model is a hybrid discrete-continuous ODE model. We develop such a model and the analytical techniques for studying such models. We use the techniques to compute the reproduction number of the hybrid system. We show that the disease-free equilibrium is locally asymptotically stable if the reproduction number is less than one and unstable, if the reproduction number is greater than one. (Received September 05, 2020)