

1109-92-163

**H. T. Banks** and **Shuhua Hu\***, Center for Research in Scientific Computation, North Carolina State University, Raleigh, NC 27695-8212. *Propagation of Growth Uncertainty in a Physiologically Structured Population.*

Classical physiologically structured population models have been widely studied and employed in the literature to model the dynamics of a wide variety of populations. However in a number of cases these have been found inadequate to describe some phenomena arising in certain real-world applications such as dispersion in the structure variables due to growth uncertainty/variability. Prompted by this, we described two recent approaches to describe this growth uncertainty/variability in a physiologically structured population. One involves formulating growth as a diffusion process while the other entails imposing a probabilistic structure on the set of possible growth rates across the entire population. Both approaches lead to physiologically structured population models with nontrivial dispersion. Even though these two approaches are conceptually quite different, we found that the resulting models, with appropriate boundary and initial conditions as well as properly chosen parameters, yield quite similar solutions. (Received January 30, 2015)