1096-39-1662 **Karyn L Sutton*** (sutton@louisiana.edu). *Computational Aspects of the Estimation of Distributed Delays.*

Past events often affect the current state of many biological, sociological, and physical systems, thus the study of dynamical systems involving delays arises naturally. Delay systems provide a means to account for these past events, which often times are better described by a distribution in the event that there is variability in the time at which they occur. Given observations of such systems, parameter estimation has proven to be a powerful tool to provide insight into the workings of the underlying processes. Mathematically, the numerical computation of such solutions (the forward problem) requires approximation of the infinite dimensional system, and convergence to the true solutions must be considered. Computation of the inverse problem, or estimation of model quantities from observations of the model output, raises further compounding issues, which we discuss here. We present a study of the estimation of distributions, focusing on those which commonly arise in biological systems. We discuss conditions under which one may have confidence in estimation results, and problems and pitfalls often encountered. (Received September 16, 2013)