

1106-49-2699

R. R. Poteau* (rpoteau2010@my.fit.edu) and **U. G. Abdulla**. *Identification of parameters in mathematical biology*.

We consider inverse problems for the identification of parameters for systems of nonlinear ODEs arising in mathematical biology. We implement a numerical method suggested in *U.G.Abdulla, Journal of Optimization Theory and Applications, 85, 3(1995), 509-526*. The idea of the method is based on the combination of Bellman's quasilinearization with sensitivity analysis and Tikhonov's regularization. We apply the method to various biological models such as Lotka-Volterra system, the Pielou extension, bistable switch model in genetic regulatory networks, an angiogenesis model, a three-step pathway modelled by 8 nonlinear ordinary differential equations, etc. Numerical results confirm the quadratic convergence. Some challenges associated with the size of the system and unknown parameters, as well as the length of the time interval are discussed. (Received September 16, 2014)