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Ibrahim Oumar Diakite*, 411 S. Nedderman drive, Arlington, TX 76013, and **Benito Chen Charpentier**. *Numerical Methods for Delay Differential Equations with Application to Biology*. Preliminary report.

we present a numerical method for delay differential equations with application to some biology problems. Two different applications are presented. The first one is R.V Culshaw and S. Ruan DDE model of cell-free viral spread of human immunodeficiency virus (HIV) in a well-mixed compartment such as the bloodstream. A discrete time delay was introduced to describe take into account the time between infection of a CD4+ T-cell and the emission of viral particles at the cellular level. We present an analytic stability analysis of the endemically infected equilibrium. we then present a numerical analysis of the stability and bifurcation process of the same equilibrium using numerical tools. The second application is the DDE model proposed by Barlett and Wangersky. Their model is a Non-Kolmogorov-Type predator prey model with two discrete times delay. We again present an analytic and a numerical analysis of the stability and bifurcation process of the steady state solutions. Numerical simulations are presented to illustrate the results. (Received September 24, 2012)