

ABSTRACT

This thesis mainly concerned with the stability analysis of numerical methods for stochastic delay differential equations. Stochastic differential equations many times result in modeling of problems like population dynamics, financial and neural networks etc. In many situations the explicit form of the solutions of such equations cannot be acquired. This thesis analyses the stability of numerical methods for stochastic delay Hopfield neural networks. This thesis consists of four parts. The first one of this thesis is the study of mean square stability of two step Maruyama methods of stochastic delay Hopfield neural networks. The second one of the thesis is the study of the almost sure exponential stability of two step Maruyama methods of stochastic delay Hopfield neural networks. The third chapter of the thesis is a study about the trajectory stability of numerical methods of stochastic delay Hopfield neural networks. The last chapter of the thesis deals the T-stability of two-step Maruyama methods of stochastic delay Hopfield neural networks.