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Stability and Bifurcation in FDE with Distributed Delay

A set of sufficient conditions for the global and local stability is established for a large class of functional differential equation with distributed delay. With the loss of the stability at the boundary of the stability regions, we discuss the Hopf bifurcation, there the computation of the coefficients are given in the form of the corresponding characteristic equation explicitly. Then these analytic results are applied to the mathematical models of white blood cell production. Numerical simulations are presented to illustrate the stability regions of parameters and to address the effect of the distributed time delay in the physiological oscillations.

This talk is based on my joint work with Drs. Jacques Belair and Xiaoqiang Zhao.