Bifurcations in Differential Equations Models for Gene Regulatory Networks. Timothy D. Comar, Benedictine University, 5700 College RD, Lisle, IL 60532, tcomar@ben.edu

We investigate differential equations models for gene regulatory networks with three or four genes. We establish conditions for which these models exhibit stable oscillations. These conditions depend on parameters representing time scales and the cooperativity of the regulating interactions. As these models can exhibit either oscillatory behavior or stable behavior, bifurcations occur between the regions in parameter space in which oscillatory and stable behavior manifest. We describe these bifurcations, which include Hopf. bifurcations.