1048-92-319 **Maya Mincheva*** (mincheva@math.niu.edu), Department of Mathematical Sciences, Northern Illinois University, DeKalb, IL 60115. *Oscillations in Biochemical Reaction Networks.*

Understanding the dynamics of interactions in complex biochemical networks is an important problem in modern cellular biology. Mathematical models of biochemical reaction networks give rise to large nonlinear dynamical systems with many unknown kinetic parameters, making the models challenging for computational analysis. However, some important properties, such as the ability of a biochemical network to oscillate can be determined by the network structure. The structure of a bipartite graph associated with a biochemical reaction network can be used to predict oscillations without knowing the kinetic parameters. We will discuss the connection between the bipartite graph of a reaction network and the graph associated with the corresponding dynamical system model. (Received February 10, 2009)