

Global Analysis of Network Dynamics

Konstantin Mischaikow, Rutgers University

I will discuss a combinatorial/algebraic topological approach to characterizing nonlinear dynamics. This approach has two important characteristics: (1) it allows for extremely efficient computations and (2) it allows for a finite descriptions of the global dynamics over all of parameter space. I will provide a quick description of the method in the context of gene regulatory networks and show how, in conjunction with time series data, it can be used to either reject proposed network models or restrict parameter regimes in which network models may operate.