1112-00-682 **David T. Anderson*** (dtanders@facstaff.wisc.edu), University of Wisconsin-Madison.

Similarities and differences between stochastic and deterministic mod= els of reaction networks.

If the abundances of the constituent molecules of a biochemical re= action system are sufficiently high then their concentrations are typically= modeled by a coupled set of ordinary differential equations (ODEs). If, h= owever, the abundances are low then the standard deterministic models do no= t provide a good representation of the behavior of the system and stochasti= c models are used. It is important to understand the similarities and diff= erences in the solutions that come from each modeling choice. I will prese= nt two results. The first gives conditions on the network that guarantee b= oth models produce quite stable behavior. The second set of conditions gua= rantees a special form of stability for the ODE model, but a form of instab= ility for the stochastic model. (Received August 18, 2015)