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Carsten Conradi and **Anne Shiu*** (annejls@math.tamu.edu). *Multisite phosphorylation systems: bistability, oscillations, and a rational parametrization of steady states*. Preliminary report.

Reaction networks taken with mass-action kinetics arise in many settings, from epidemiology to population biology to systems of chemical reactions. This talk focuses on certain biological signaling networks, namely, multisite phosphorylation networks. Many of these systems exhibit “toric steady states” (that is, the ODEs generate a binomial ideal), and more generally the set of steady states admits a rational parametrization (Thomson and Gunawardena 2009). We describe how this parametrization allows us to investigate the dynamics of two multisite phosphorylation networks: the emergence of bistability in a network underlying ERK regulation, and the capacity for oscillations in a mixed processive/distributive phosphorylation network. (Received August 30, 2016)