Maya Mincheva* (mmincheva@niu.edu). Oscillations in a Mixed Network Mechanism.

We will discuss the existence of oscillations in a phosphorylation mechanism where the phosphorylation is processive and the dephosphorylation is distributive. We show that in the three-dimensional space of total amounts, the border between systems with a stable versus unstable steady state is a surface that consists of points of Hopf bifurcations. The emergence of oscillations via a Hopf bifurcation is enabled by the catalytic and association constants of the distributive part of the mechanism: if these rate constants satisfy two inequalities, then the system admits a Hopf bifurcation.

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