

# Applied Dynamical Systems Seminar

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12:00p.m., HH-3017

*Homogeneous auxin steady states and spontaneous oscillations in flux-based auxin transport models*

**Abstract:**

We consider patterns formed by active transport of auxin in a tissue, where the accumulation of transporters is activated by local fluxes of auxin. We characterize the steady states for which auxin is homogeneous in the tissue. Under a condition of regularity of the dependence of transporters to the flux, we can prove that one of these steady states, with zero flux everywhere, is always locally asymptotically stable. When the condition of regularity is not satisfied, by a combination of analytic and numeric results, we show that the same steady state may undergo bifurcations and become unstable. In particular, we can observe stable oscillations via Hopf bifurcation in the system having the form in a row of cells. This presents that flux-based active transport alone is enough to induce spontaneous oscillations of auxin in a tissue. This is joint work with Dr. Farcot.

-----All are welcome-----