



Mathematical Biology Seminar

Monday, September 14, 2026

1:00 pm MT – Room UComm 2-108 (in person)

Join Zoom Meeting

<https://ualberta-ca.zoom.us/j/97624718507>

Meeting ID: 976 2471 8507



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Distributed yet Coordinated Intervention Strategies for Networked Epidemics under Resource Constraints

In federated countries, individual jurisdictions retain significant autonomy over public-health decisions. This autonomy, while politically essential, can hinder the coordinated action needed to suppress an epidemic that spreads across regional boundaries. The central challenge is therefore to design intervention strategies that remain fully distributed—each region uses primarily local information and limited neighbor communication—yet still achieve synchronized, network-wide eradication of the disease while respecting limited treatment capacity.

This talk presents a framework for such strategies applied to networked models coupled by mobility. The approach preserves jurisdictional independence, enforces realistic resource bounds, and provides rigorous guarantees that infection levels converge to the disease-free equilibrium across the entire network. The approach addresses both asymptotic and time-critical performance objectives, and numerical studies on multi-region networks show rapid, synchronized clearance of infection under the proposed coordinated yet distributed policies. The results highlight how carefully designed local decision rules, combined with minimal information exchange, can reconcile regional autonomy with national-level epidemic control.