THE UNIVERSITY OF ALBERTA

Department of Mathematical and Statistical Sciences

Special Talk

"Switches, oscillations, and the dynamics of monotone dynamical systems"

Dr. Germán Enciso
Department of Systems Biology
Harvard Medical School

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CAB 657 @ 3:00 p.m.

Abstract:

Determining the long-term behavior of large biochemical models has proved to be a remarkably difficult problem. Yet these models exhibit several characteristics that might make them amenable to study under the right perspective. One possible approach (first suggested by Sontag and Angeli) is their decomposition in terms of so-called monotone systems, which can be thought of as systems with exclusively positive feedback.

In this talk I discuss some general properties of monotone dynamical systems, including recent results regarding their generic convergence towards an equilibrium. Then I will discuss the use of monotone systems to model biochemical behaviors such as switches and oscillations under time delays.