

Department Colloquium

Speaker: Pietro-Luciano Buono, Ontario Institute of Technology

Date: Friday, January 29

Time: 2:30 p.m.

Place: Jeffery 234

Title: Synchronization and dynamics in symmetric networks of differential equations: with applications to sensing and power devices

Abstract: In this talk, I will be discussing various examples of coupled networks of differential equations with symmetry. Several of these networks arise from mathematical modelling in biology, physics and engineering. Often, the main regime of interest is the stable synchronization of all units in the network; whether at steady-state, in a periodic state or even in a chaotic regime. However, other dynamical regimes are often observed and sometimes desirable. I will discuss in more details these ideas in the context of coupled lasers, gyroscopes and energy harvesters. The main tool used to study those systems is equivariant bifurcation theory. I will conclude with recent results about the structure of Hamiltonian coupled networks of differential equations. The main collaborators on these projects are Antonio Palacios, Bernard Chan (San Diego State) and Juancho Collera (UP Baguio).