

Department of Applied Mathematics, University of Waterloo

GRADUATE STUDENT SEMINAR

DATE: MONDAY, APRIL 23, 2012

TIME: 17:00 – 18:00; MC 5136



Bifurcations of Large Networks of Pulse-Coupled
Oscillators

- Wilten Nicola, PhD Candidate -



Many functional subunits of the brain contain a large number of neurons. These regions are often modeled as networks of pulse-coupled oscillators. The models can be conductance based or of the integrate-and-fire type. When fit properly, these large network models replicate the bifurcations of the original data. Since these models are non-smooth systems, determining the bifurcation types of these networks is outside the realm of classical bifurcation theory. Population density equations extend the classical theory to these systems. The theory is applied to a model consisting of a network of Izhikevich neurons fit to hippocampal region CA3.



PIZZA, SOFT DRINKS, AND SNACKS PROVIDED
COURTESY OF THE DEPARTMENT



Questions, Comments, and Interest can be directed to
John Lang, j8lang@uwaterloo.ca, MC5133