



**Department of Mathematics, Statistics and Computer Science
St. Francis Xavier University
Presents**

**Collective motion of animal groups : Analyzing models,
data, and connecting the two**

by

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Tuesday, April 14th, 2009 @ 2:30 in Annex 23a

Animals moving together cohesively is a commonly observed, sometimes fascinating phenomenon in biology, with bird flocks and fish schools as common examples. In order to understand the mechanisms that lead to such coordinated motion, a variety of differential equation models have been developed. We ask two general questions of these models: [a] How does one use such models to gain insights into group behavior, and [b] How can one inform and validate models against real-world animal groups?

Researchers have typically answered [a] with numerical simulation, and have, with a few exceptions, ignored [b], owing to the scarcity of available data on moving animal groups. In this talk, I'll outline a method for obtaining analytical results from models by considering geometrically simple groups, leading to clearcut relationships between individual and group properties not possible through simulation alone. I'll then discuss some of my work in addressing [b], through gathering and analyzing field data of groups of aquatic ducks (surf scoters) collectively foraging near downtown Vancouver, BC.

Refreshments will be served before the talk in AX24A