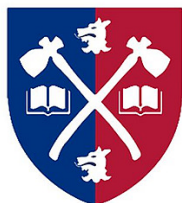
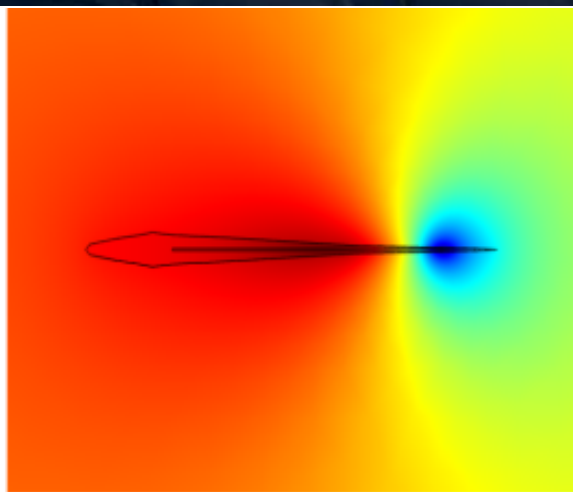


Acadia Physics Seminars presents
**From sensory biophysics to quantitative modelling of
behaviour: a case study of electric fish**



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OCT 23 · 2020

4:30 pm, Atlantic Canada time

Join via Zoom

<https://us02web.zoom.us/j/82218695059?pwd=Q3VVaTdwQUYyMkQ3OTZkQm5OVmpGZz09>

Meeting ID: 822 1869 5059

Passcode: 2WtG1q

SPEAKER

**Professor Alexandre
Melanson**

Université de Moncton

ABSTRACT

All animals use their senses to gather information about their environment. Sensory modalities come in many different forms and rely on different physical processes to fulfill their purpose. Sensory information is then translated into a neural code and used by neural circuits to generate appropriate behavioural responses. Here I will give a survey of how electric fish use self-generated electric fields to navigate, capture prey, and communicate. I will also describe recent research efforts aimed at inferring low-dimensional mathematical models of neural dynamics based on behavioural data. These models take the form of stochastic differential equations and involve nonlinear phenomena such as bistability and synchronization of limit cycle oscillators. I will then explain how such models can enhance our understanding of the neural origins of behaviour.

BIO

Alexandre Melanson is an Assistant Professor of Physics at the Université de Moncton since 2018. He obtained a Ph.D in Physics (computational neuroscience) from the University of Ottawa (2019), a M.Sc in Physics (physical glaciology) from the Memorial University of Newfoundland (2012) and a B.Sc (Hons) Physics from the Université de Moncton (2010).

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