



**FALL 2019**

# **RENSSELAER POLYTECHNIC INSTITUTE**

## **DEPARTMENT OF MATHEMATICAL SCIENCES COLLOQUIUM**

### **Modeling visual circuit development in mice through synaptic plasticity**

**Abstract:** The primary visual cortex (V1) of mammals is an area of the brain that receives and interprets visual input. Neurons in V1 respond preferentially to a particular orientation angle of a visual stimulus. In mammals such as cats, V1 contains an ordered map of the orientation preference of each neuron, with cells preferring similar angles residing close to one another. In mice, however, the map of orientation preference appears random and disordered, with little correlation between preferred orientation and location in cortical space. Though much is known about orientation-preference maps in adult mammals, the mechanism underlying the formation of these maps during development is still unknown. In particular, I am interested in understanding under which circumstances does the map that forms appear ordered (like in cats) or disordered (like in mice). In this talk, I will discuss a mathematical model used to describe the development of neuronal networks in V1 and suggest a testable hypothesis for the mechanism underlying the formation of either an ordered or disordered orientation-preference map.

Jennifer Crodelle (Courant Institute, NYU)

Thursday, November 21, 2019

Amos Eaton 216 @ 4-5pm

*Refreshments served 3:30-4pm Amos Eaton 4<sup>th</sup> Floor Lounge*