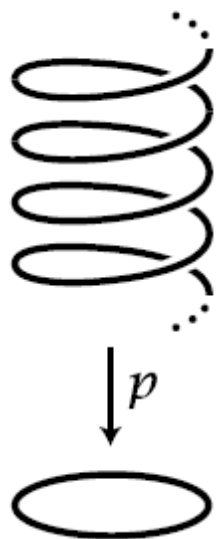


# A Theoretical Geometric Model for Olfactory Learning and Sensory Processing

Undergraduate Math Club  
CORNELL UNIVERSITY



**SPEAKER**

Jack Cook

**ABSTRACT**

Using the tools of smooth manifold theory, we propose a generalized framework for olfactory reception, learning, and processing. Inspection of the tangent bundle to a manifold yields vector fields which allow for quantification of changes. We utilize group actions to discover fibre bundles over the manifold and discover various properties related to learning. Under this paradigm, we develop a method for categorization as well as analytical tools to model changes in the category. We end with a quick discussion of searching for data on the manifold in a way that beats “nearest neighbour.”

**NOV 19 at 5:15pm**

**Malott 532 ★ Refreshments**