1146-92-335 **Nora Youngs*** (nora.youngs@colby.edu). *Algebraic and topological methods for understanding combinatorial neural codes.*

A major problem in neuroscience is to understand how the brain uses neural activity to form representations of the external world. Many types of neurons fire in response to a certain subset of possible stimuli, called the receptive field for the neuron. The firing patterns of a set of such neurons gives a combinatorial neural code, and the combinatorial information contained in this code often reflects important features of the space of stimuli which generated it. How can we efficiently extract such information? This talk will introduce some of the algebraic and topological methods currently in use for encoding and extracting combinatorial structure from neural codes, and also discuss how this structure can be used to infer features of the underlying stimulus space, particularly under the assumption of convex receptive fields. (Received January 26, 2019)