1135-92-2517 **Mark C Agrios*** (magrios@email.wm.edu). *Simplicial Homology and Neural Networks: An analysis of biological neural networks using persistent homology.* Preliminary report.

In this study, we use techniques from algebraic topology to study structure and dynamics in biological neural networks. Neural networks can be represented as simplicial complexes, topological structures from which we can extract algebraic information. Using a technique called persistent homology, we can classify important features of these simplicial complexes while also filtering out the "noise" often found in these complex dynamical systems. In this study we look at two types of persistence we can can construct and how they can help us identify different topological and dynamic properties of these networks. (Received September 26, 2017)