1135-55-2595 **Maria Gommel*** (maria-gommel@uiowa.edu). *Using Topology to Study the Brain: An Analysis of fMRI data using TDA.* Preliminary report.

Topological Data Analysis (TDA) is a relatively new area of study that uses tools from algebraic topology to uncover the underlying shape of a given data set. These methodologies can readily be applied to neuroscience data. My work uses TDA to analyze correlation matrices obtained from resting-state fMRI brain scans of healthy controls, where the entries in the matrix represent correlations between regions of the brain. We compute persistent homology and obtain a persistence diagram for each correlation matrix. We then use several methods to attempt to group the persistence diagrams by gender and by age, looking for notable differences between groups. We aim to extend this work by comparing the persistence diagrams of data from children who will develop Huntington's disease to those from healthy controls. (Received September 26, 2017)