1135-54-215      **Xiaojun Zheng\*** (`zheng2@stolaf.edu`), 1520 St. Olaf Ave., Northfield, MN 55057. *Topological Data Analysis on Simple English Wikipedia Articles.* Preliminary report.

Persistent homology is an algebraic method to detect the topological features (such as connected components and holes) of high-dimensional data. In this presentation, we use persistent homology to analyze the structure of a point cloud produced from a semantic analysis of Simple English Wikipedia articles. Specifically, the semantic algorithm converts each article to a 200-dimensional vector. We use the two-parameter persistent homology software RIVET to distinguish the Wikipedia point cloud from a point cloud of similar random vectors. We also compare the topological similarity of Wikipedia articles for major cities using semantic distance and geographic distance between the cities. In addition to analyzing the RIVET plots, we apply statistical tests to the topological differences between the data sets to confirm our conclusions. (Received August 11, 2017)