

1106-AE-2398 **Lori Beth Ziegelmeier*** (lziegel1@macalester.edu), Macalester College, 1600 Grand Avenue, Saint Paul, MN 55105, and **Chad Topaz** and **Tom Halverson**. *The Topology of Biological Swarms*.

In this talk, we apply methods from topological data analysis (TDA) to analyze the dynamics of biological swarms. We analyze the classical swarming models of Vicsek (1995) and D’Orsonga, Chuang, Bertozzi, Chayes (2006), in which simple local interactions produce aggregate behavior. In these simulations, numerical position and velocity data are viewed as point clouds varying over time. Using methods from persistent homology, we are able to capture topological features, such as connected components and topological circles, that persist at multiple scales. These topological features detect events that classical global metrics do not. (Received September 16, 2014)