

1106-VK-2396 **Rachel A. Neville***, Department of Mathematics, 1874 Campus Delivery, Fort Collins, CO 80523.
Patterns in Persistence: Persistent Homology of Chaotic Dynamical Systems. Preliminary report.

Persistent homology is a recently explored tool in computational topology that captures information regarding the longevity or size of topological features of geometric objects or discrete data. In this project, persistent homology is applied to discrete and continuous functions as a means of examining connected components of level sets of the function. Information is recorded in a persistence diagram. This provides a novel tool for computationally examining dynamical systems. When the persistence diagram is generated for an orbit of the logistic map, an interesting pattern arises in the persistence diagram in the periodic regimes that surprisingly continues in the chaotic regime. This pattern will be discussed and extended to other systems, including continuous systems. (Received September 16, 2014)