Topological analysis of dynamic graphs for cyber network monitoring
Emilie Hogan, Pacific Northwest National Laboratory

I will begin by introducing dynamic graphs in the context of cyber data and discussing the challenges and uncertainty associated with constructing them. The main focus of my talk will be to describe the ideas behind topological data analysis and manifold learning to monitor cyber networks. Topological data analysis is focused on topological persistence of complexes described by graph data in an effort to identify persistent structures in cyber graphs. In manifold learning we turn dynamic graphs into trajectories through Euclidean space and discover low dimensional representations. These low dimensional representations can be used to create a characterization for network behaviors.