1116-58-2446 **Sofya Chepushtanova*** (sofya.chepushtanova@wilkes.edu), Department of Math and CS, Wilkes University, 84 West South Street, Wilkes-Barre, PA 18766. *Persistent Homology on Grassmann manifolds for Analysis of Hyperspectral Movies.*

We present a geometric framework for characterizing information in hyperspectral movies, i.e., sequences of hyperspectral data cubes evolving in time. Time frames in such a movie are mapped to a sequence of abstract points on the real Grassmann manifold $G(k, n)$, a manifold that parameterizes the k-dimensional subspaces of $\mathbb{R}^n$. The Grassmannian framework affords data compression while retaining pertinent data structure. This structure, associated with the evolution of the frames of a hyperspectral movie, can be revealed by persistent homology, a relatively new multiscale method from topological data analysis. The proposed approach is applied to the detection of chemical signals in the Long-Wavelength Infrared data set. (Received September 22, 2015)