

1145-55-1489

Hee Rhang Yoon* (iris.yoon@math.gatech.edu), iris.yoon@math.gatech.edu, and **Robert Ghrist**. *Cellular cosheaves for distributed computation of persistent homology*.

We present a distributed computation mechanism of persistent homology using cellular cosheaves. Our construction is an extension of the generalized Mayer-Vietoris principle to filtered spaces obtained via a sequence of spectral sequences. We discuss a general framework in which the distribution scheme can be adapted according to a user-specific property of interest. The resulting persistent homology reflects properties of the topological features, allowing the user to perform refined data analysis. Finally, we apply our construction to perform a multi-scale analysis to detect features of varying sizes that are overlooked by standard persistent homology. This is joint work with Robert Ghrist. (Received September 24, 2018)