1115-68-278 **Michael Kerber**, **Donald R. Sheehy*** (don.r.sheehy@gmaill.com) and **Primoz Skraba**.
Persistent Homology and Nested Dissection.

Nested dissection is a way of solving systems of linear equations by divide and conquer. For many linear systems that occur naturally in many settings, nested dissection gives a guaranteed improvement over naive Gaussian elimination. These are the so-called beta-separable systems, where beta is a constant that governs how big the improvement will be. In this talk, I will show how separability affects the computation of persistent homology. In particular, I will describe an algorithm for computing the persistent homology that exploits a separator structure on the underlying simplicial complex to give running times that are faster than matrix multiplication for a large class of inputs.

This talk will be based on joint work with Primoz Skraba and Michael Kerber to appear at SODA 2016. (Received September 21, 2015)