Mathematics & Statistics Colloquium

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Large Scale Geometry and Persistent Homology

Abstract. Persistent Homology is a tool for examining topological features of a space at different scales. Traditionally, these scales are obtained from a metric on the space in question. The Persistent Homology of a space can be visualized through a Barcode or a Persistence Diagram. We discuss a generalization of the process for producing a Persistence Diagram which works for spaces not endowed with a metric. The main idea of this approach uses ideas from Large Scale Geometry pioneered by Jerzy Dydak. As such, we briefly give some background information on Large Scale Geometry. We will also present examples as time permits. This is joint work with Eric Hanson and Matt Insall.

Biographical Sketch. Dr. Jensen received his Bachelor of Science degree from Brigham Young University in 2011. He received his PhD in Mathematics from The University of Tennessee 2017. His research interests include Large Scale Geometry, Algebraic Topology, and Data Science.