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Title. **Homology Inference Using Persistence**

Abstract. Persistent homology is an algebraic tool for measuring topological features of shapes and functions. A finite point sample that approximates a space better than the size of the smallest feature generates homology of persistence smaller or larger than but not inside a range related to that size. The homology of larger persistence reflects homology of the space while the homology of smaller persistence does not. Based on this principle we can infer the homology of the space from the persistent homology of the point sample. In this talk we introduce the basic concepts underlying this approach to homology inference and illustrate the principle with a few examples.