0-dimensional Homology Preserving Dimensionality Reduction with TopoMap
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Problem
- Project the points in 2D such that:
  - 0-dimensional persistence diagram of the Rips filtration is preserved
  - One-to-One mapping between components in the original space and projected space
  - Creation and destruction time of components is preserved

Key Insight
- Topology changing edges (that merges two components) form the Minimum Spanning Tree

TopoMap
- Step 1: Compute MST in high dimension
- Step 2: Iteratively place points in 2D based on MST edges

Sample Results