

Homework 8

2.(e) Explain the picture you find.

The resulting plot shows the barcode of persistent Betti numbers for the Vietoris-Rips complex of the torus. The horizontal axis represents the filtration values, and the vertical axis represents the Betti numbers. Each bar represents a homology class that exists for a range of filtration values. The length of the bar indicates the range of filtration values for which the homology class persists. In this case, we see several bars representing the 0th Betti number, indicating the number of connected components, and several bars representing the 1st Betti number, indicating the number of holes. We also see a single bar representing the 2nd Betti number, indicating the number of voids.