**Shaft from SolidWorks**

max\_dimension = 4;% max dimension of any simplex included

max\_filtration\_value = 16%0.9;

num\_divisions = 1000;

size of the point cloud = 573 3

num\_simplices = 3939

betti\_numbers\_array = 2×1 int32 column vector

10

7

The Euler characteristic is 3 = 573 - 1656 + 1398 - 312 + 0, using the alternating sum of cells.

The Euler characteristic is 3 = 10 - 7, using the alternating sum of Betti numbers.

Chart, bar chart

Description automatically generated

Chart, bar chart

Description automatically generated

**Shaft from Inventor**

Size of the point cloud =

672 3

num\_simplices = 4724

betti\_numbers\_array = 2×1 int32 column vector

11

7

The Euler characteristic is 4 = 672 - 1980 + 1692 - 380 + 0, using the alternating sum of cells.

The Euler characteristic is 4 = 11 - 7, using the alternating sum of Betti numbers.

Chart, bar chart

Description automatically generated

Chart, bar chart

Description automatically generated