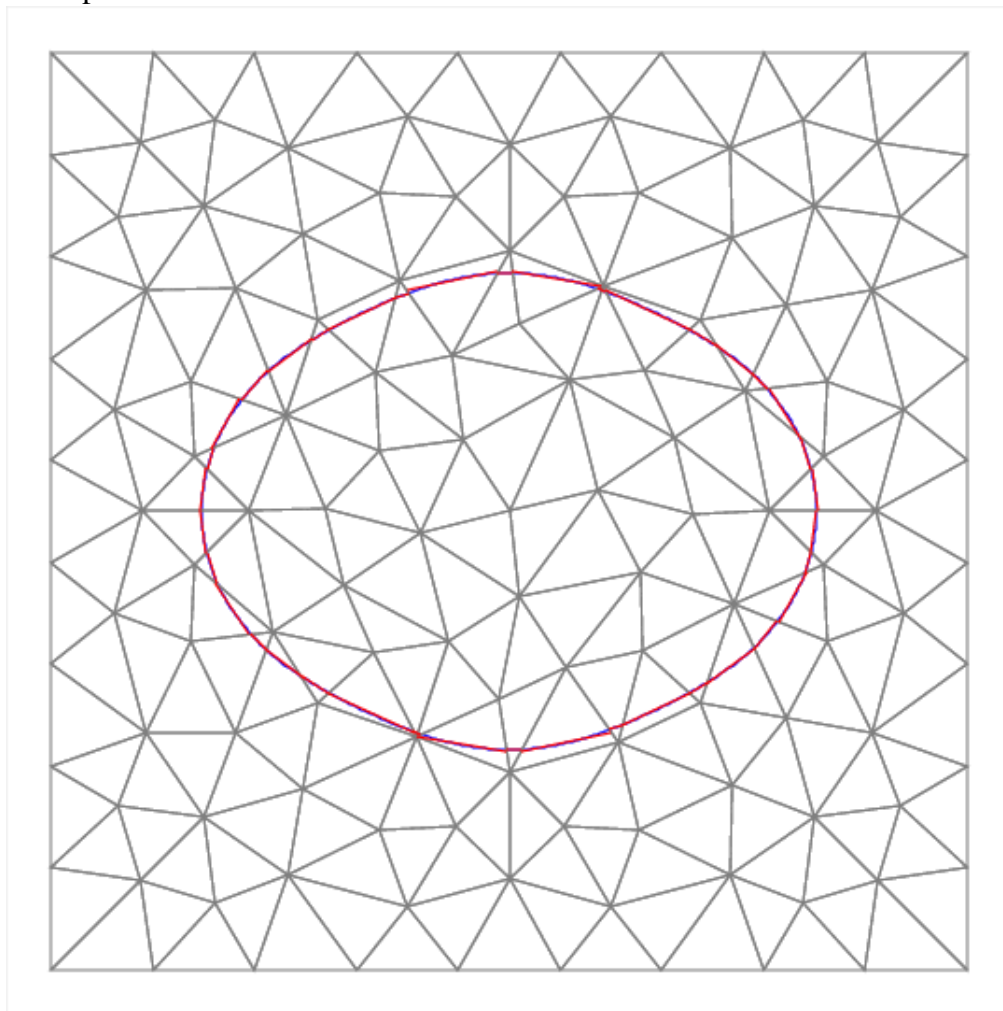


## Patterned Interface Reconstruction

The Patterned Interface Reconstruction (PIR) algorithm reduces the discontinuity between material interfaces in neighboring computational elements. This smoothing improves the accuracy of the reconstruction for smooth bodies. The method can be used in two- and three-dimensional Cartesian and unstructured meshes. Planar interfaces will be returned for planar volume fraction distributions. The algorithm is second-order accurate for smooth volume fraction distributions.

How does the PIR algorithm perform on a curved two-dimensional shape that is not a sphere or a plane?



Volume fractions for a Cassini Oval are computed for an unstructured mesh. The reconstructed interfaces are shown as **red line segments** and the input profile of the Cassini Oval is shown as the **blue curve** in the figure. The agreement is excellent. The blue, analytic interface is barely visible under the reconstructed interfaces.