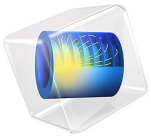

Model created in COMSOL Multiphysics 6.4

Removing Small Geometric Entities with the Defeaturing Tools

Introduction

As an alternative to the repair operation you can also apply defeaturing tools to remove small features from an imported CAD geometry. Using these tools you can first search the geometry for features that fall within a set tolerance, then, after examining the search results, you can decide which ones to delete. While the repair operation has the advantage that it quickly removes every feature it can within a specified tolerance, the defeaturing tools gives you more control with selective removal of features.

To search for and remove small features from a geometry using the defeaturing tools follow this general workflow:

- Import the file
- Search for and delete small features, such as
  - small faces
  - sliver faces
  - short edges
  - fillets

For the initial search for a feature it is good practice to use a tolerance slightly higher than the default import tolerance, 10^{-5} m. Thus, in a first attempt, search for small faces with a maximum size of 10^{-4} m. Continue by deleting all or some of the returned small faces, then search again with an even higher tolerance, for example $5 \cdot 10^{-4}$ m. The choice of tolerance will depend on the feature size in your geometry.

Meshing the geometry can also serve as a diagnostic tool for locating small features, and can be used in combination with the defeaturing tools. After meshing, you can measure some of the small edges reported by the mesher to find a good starting point for a tolerance setting for the defeaturing tools.

For the step-by-step instructions of this tutorial, see the book *Introduction to LiveLink™ for PTC® Creo® Parametric™*.

Application Library path: `LiveLink_for_PTC_Creo_Parametric/Tutorials, _CAD_Import/wheel_rim_defeature`
