Large Telescope Truss - Mesh

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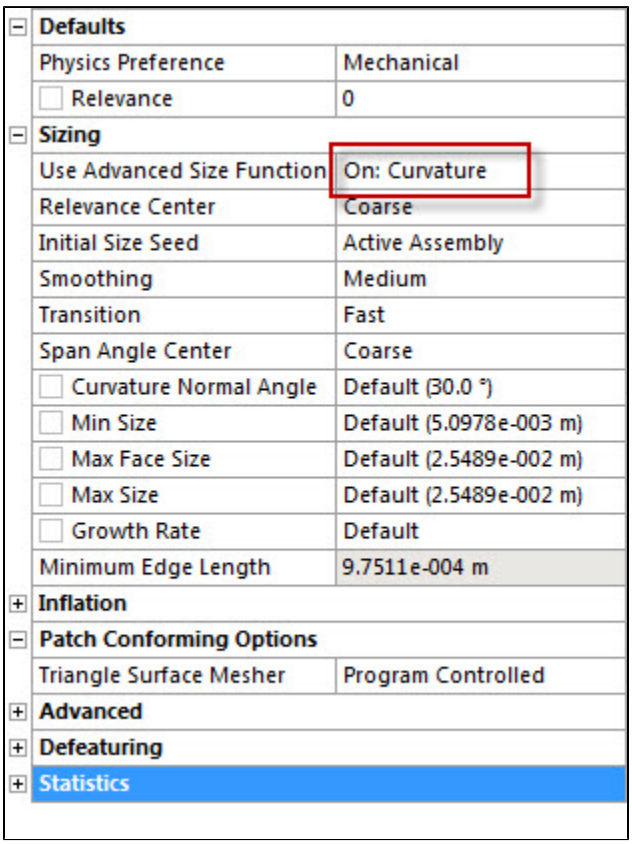
Mesh

The standard mesh for the geometry works pretty well for the geometry, we simply need to apply a refinement.

The first step is to attach a Static Structural model to the Geometry. Simply drag the option from the toolbox and drop it onto the Geometry. Open the model.

First, select Mesh and open up Sizing. Select Advanced Size Function, and change it to "On: Curvature."



Defaults	
Physics Preference	Mechanical
Relevance	0
Sizing	
Use Advanced Size Function	On: Curvature
Relevance Center	Coarse
Initial Size Seed	Active Assembly
Smoothing	Medium
Transition	Fast
Span Angle Center	Coarse
Curvature Normal Angle	Default (30.0 °)
Min Size	Default (5.0978e-003 m)
Max Face Size	Default (2.5489e-002 m)
Max Size	Default (2.5489e-002 m)
Growth Rate	Default
Minimum Edge Length	9.7511e-004 m
Inflation	
Patch Conforming Options	
Triangle Surface Mesher	Program Controlled
Advanced	
Defeaturing	
Statistics	

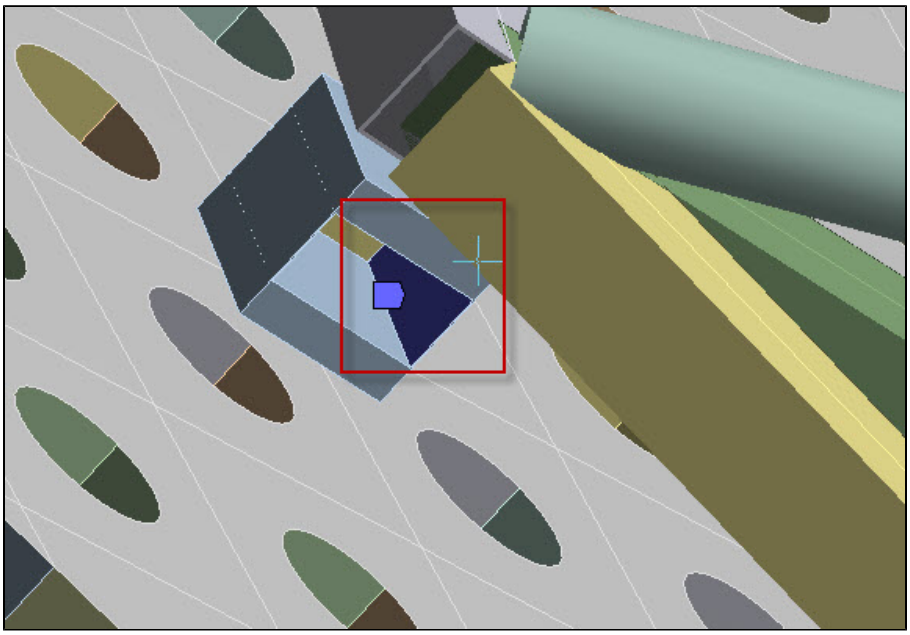
The defaults for the Curvature sizing work well.

Now, there are two types of sizing that should be applied. First off is the Sizing of the Base Mount Pad. The pad does not have much motion or deformation, so it does not need as many elements as the default setting.

Add a sizing, and apply the base mount pad as the geometry. Select the behavior as Hard, and the element size as .05m. This should reduce the number of elements on the base pad.

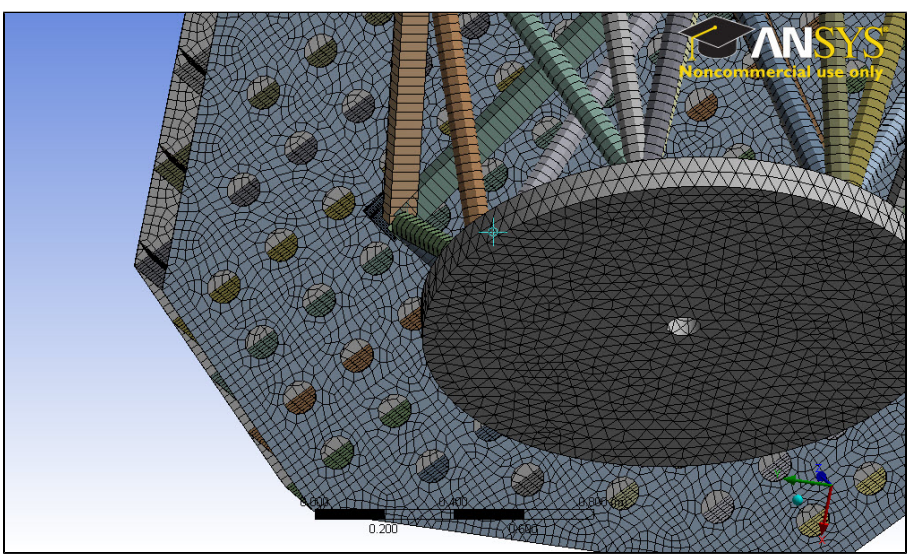
Scope	
Scoping Method	Geometry Selection
Geometry	1 Body
Definition	
Suppressed	No
Type	Element Size
Element Size	5.e-002 m
Behavior	Hard

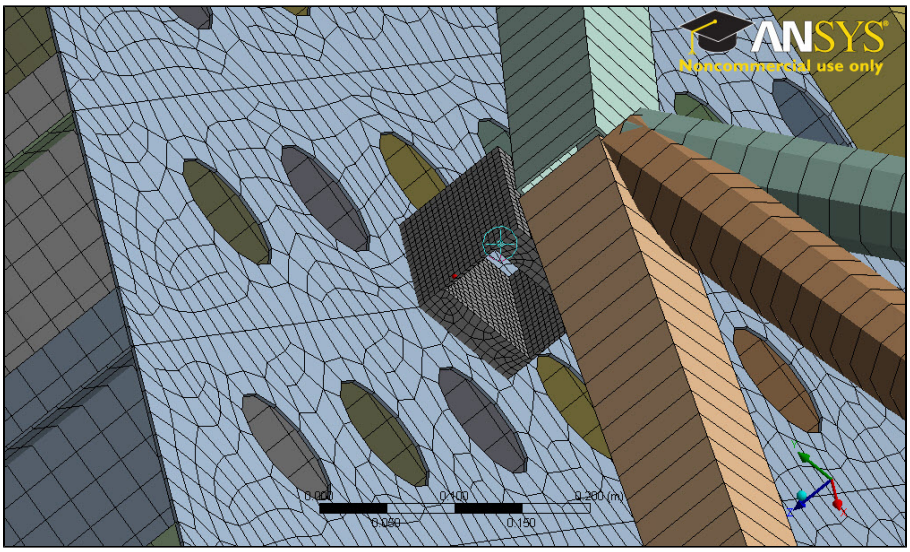
Now we need to refine the insides of the Flexure mounts. Currently, they do not have enough elements, since they deform greatly. Add a face sizing, and apply the face sizing to the two inside faces of the Flexure mounts.



Set the element size to 0.002m. Repeat to create a face sizing on all the Flexure Mounts.

Once applied, generate the mesh. After it is done, it should look somewhat like this:





Go to Step 4: Physics Setup

Go to all ANSYS Learning Modules