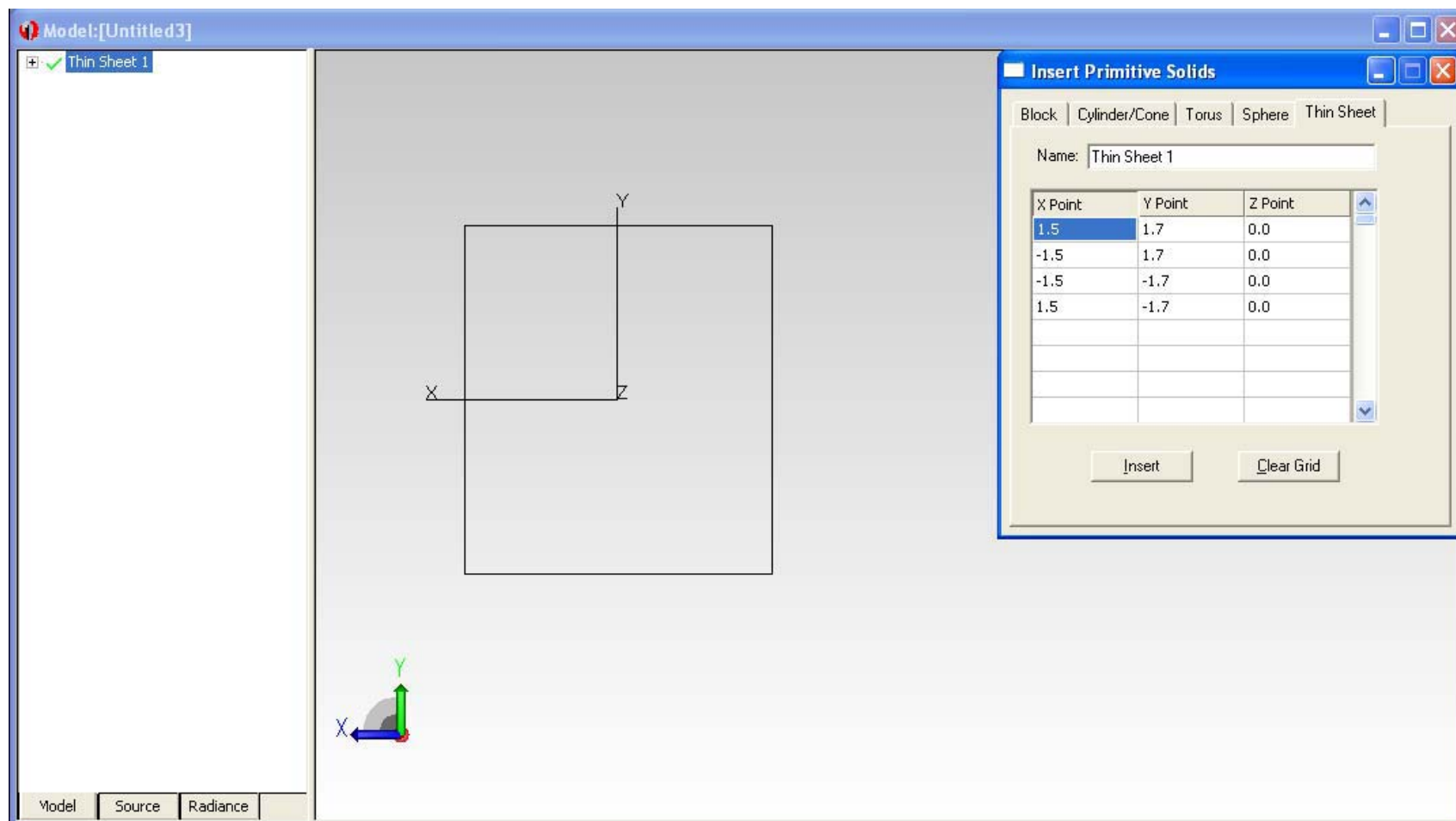


LED MODELING

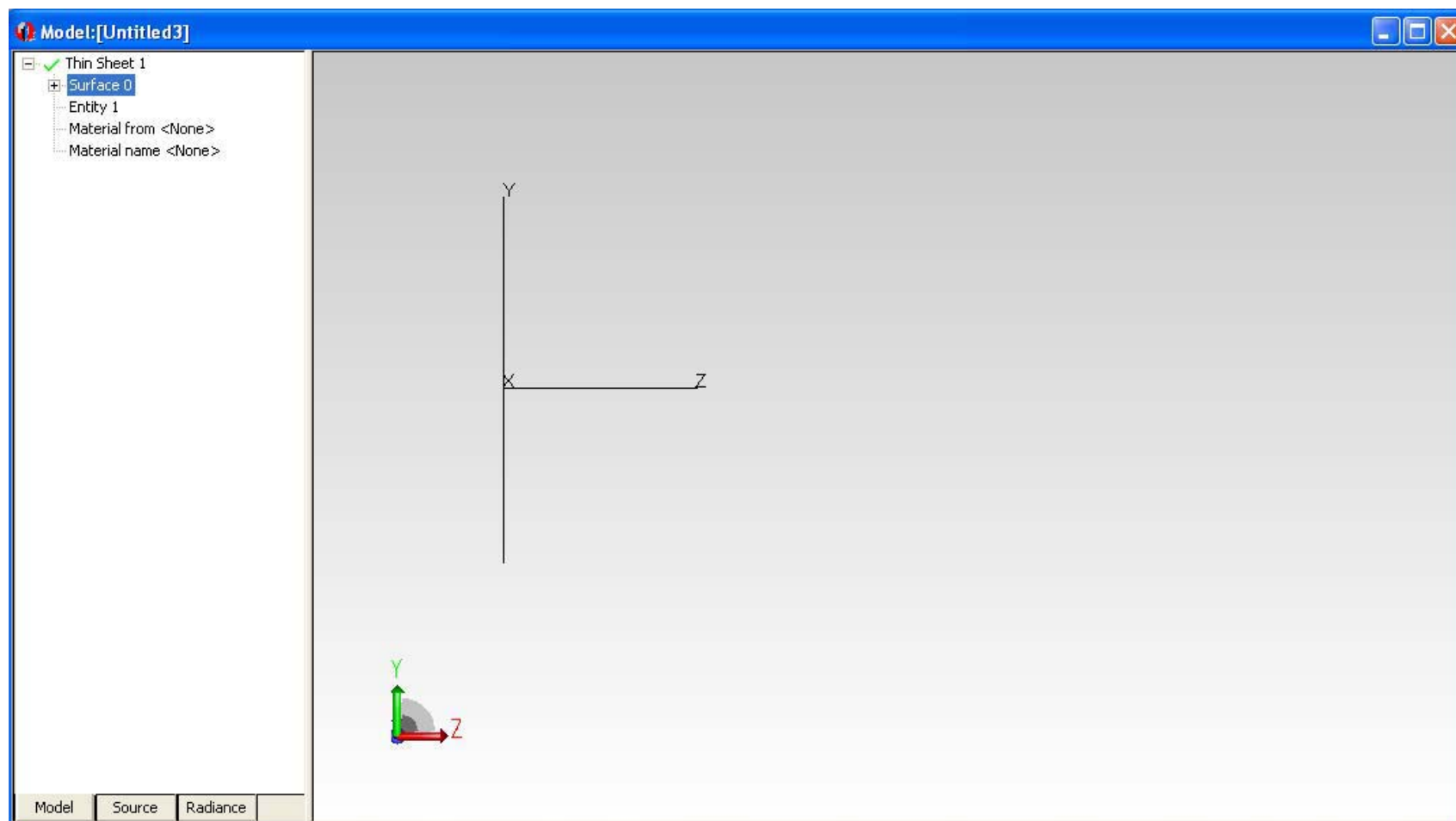
LED Modeling

Create a Thin Sheet

- Select View/Profiles/XY or click the View XY button on the toolbar
- Open the Insert/Primitive Solid dialog and select the Thin Sheet tab
- Enter the four corners of the Thin Sheet in mm in the dialog box and click the Insert Button
- Press the Zoom All button or select the View/Zoom/All menu to see the new object

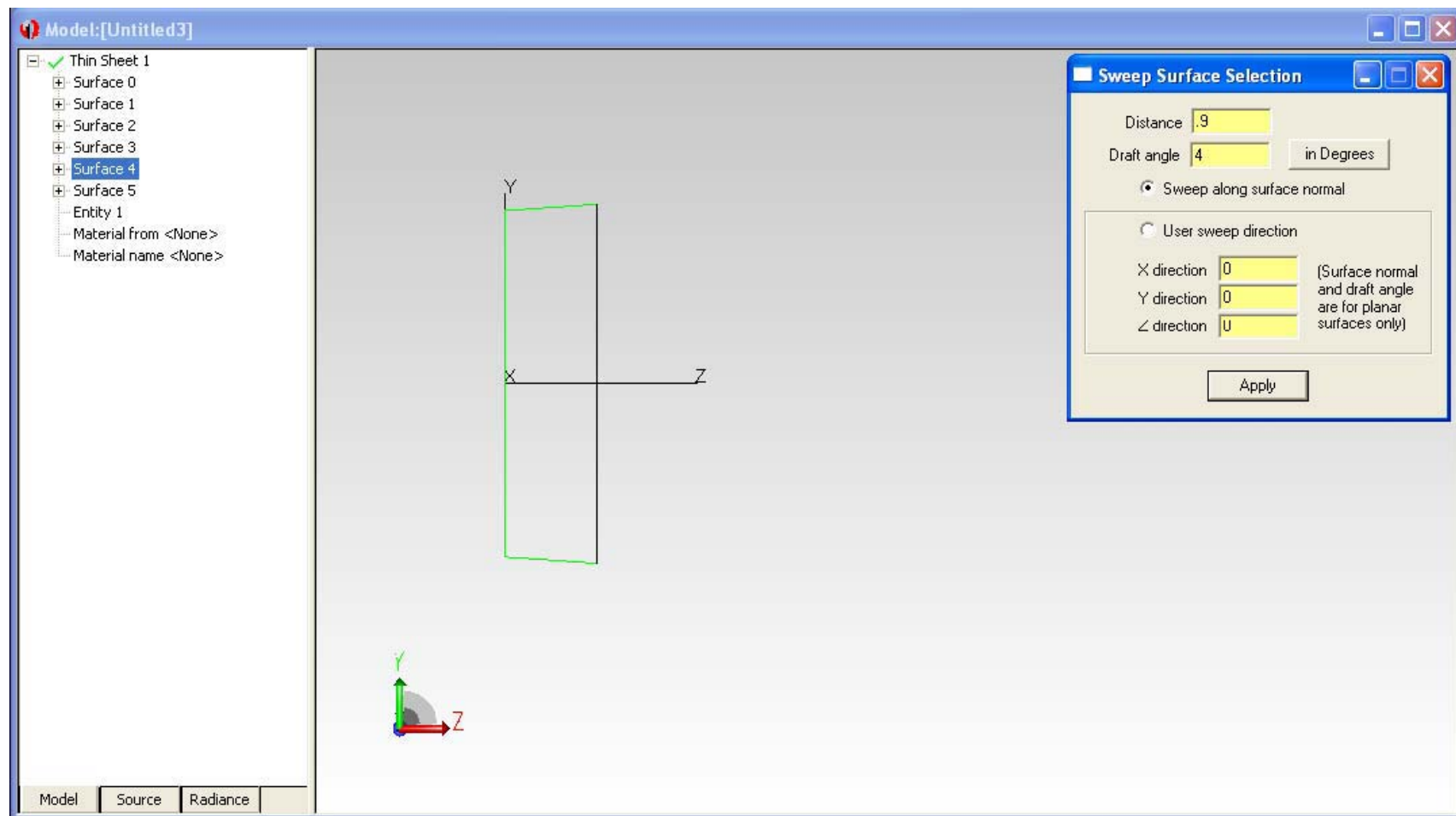


Selecting a Surface



Use Sweep to Form a Solid

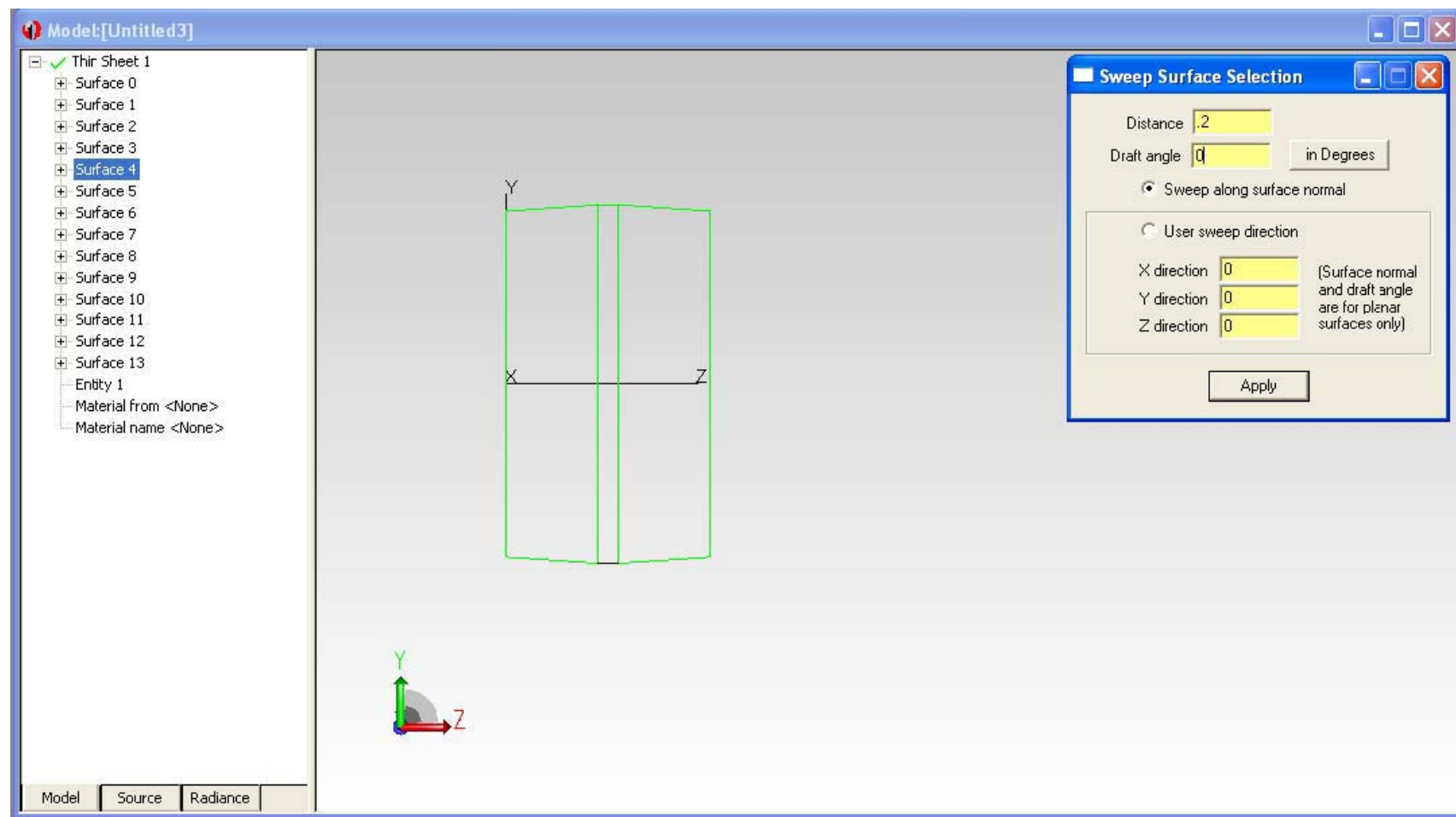
- Select Edit/Surface/Sweep.
- Enter a sweep distance of 0.9 mm and a draft angle of 4 degrees.
- Click Apply. The surface will be swept along the plane's surface normal, in this case along the Z axis.
- Make sure Surface 4 is selected for the next sweep to complete the object.

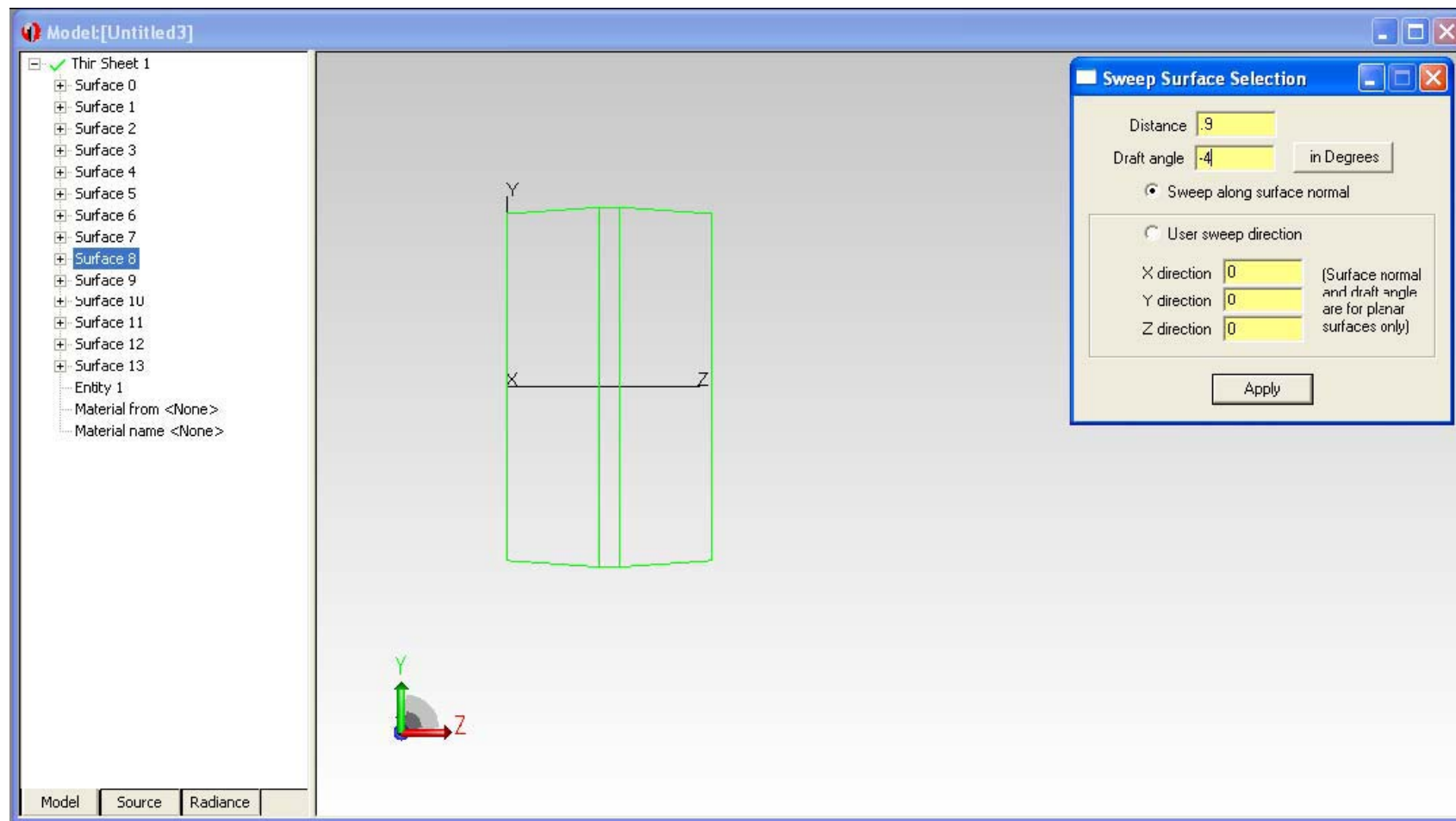


Conti..

Complete the Solid

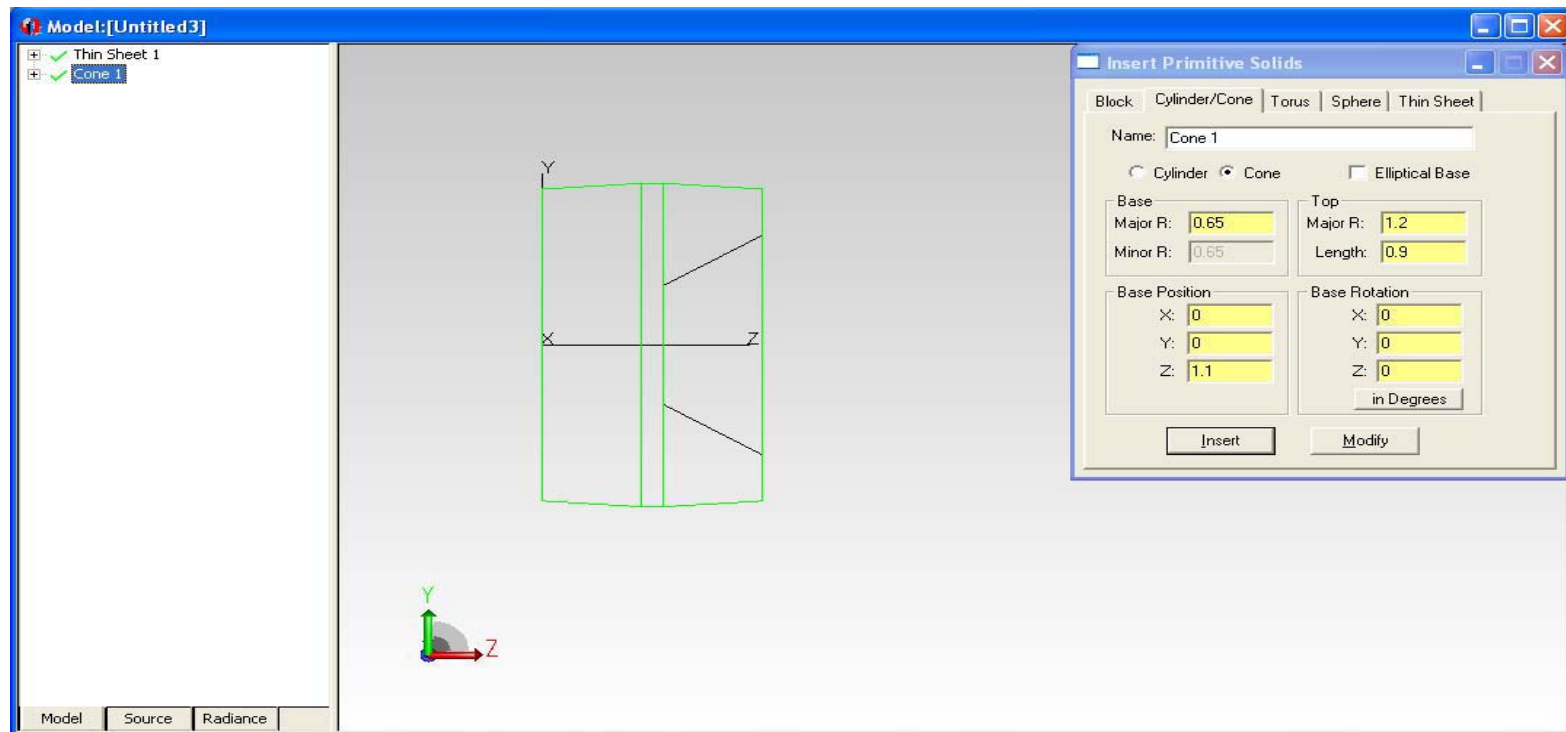
- Select Surface 4.
- Sweep by 0.2 with draft=0 to create the central portion of the package.
- Select Surface 8.
- Sweep again by 0.9 with a -4 degree draft to complete the construction.





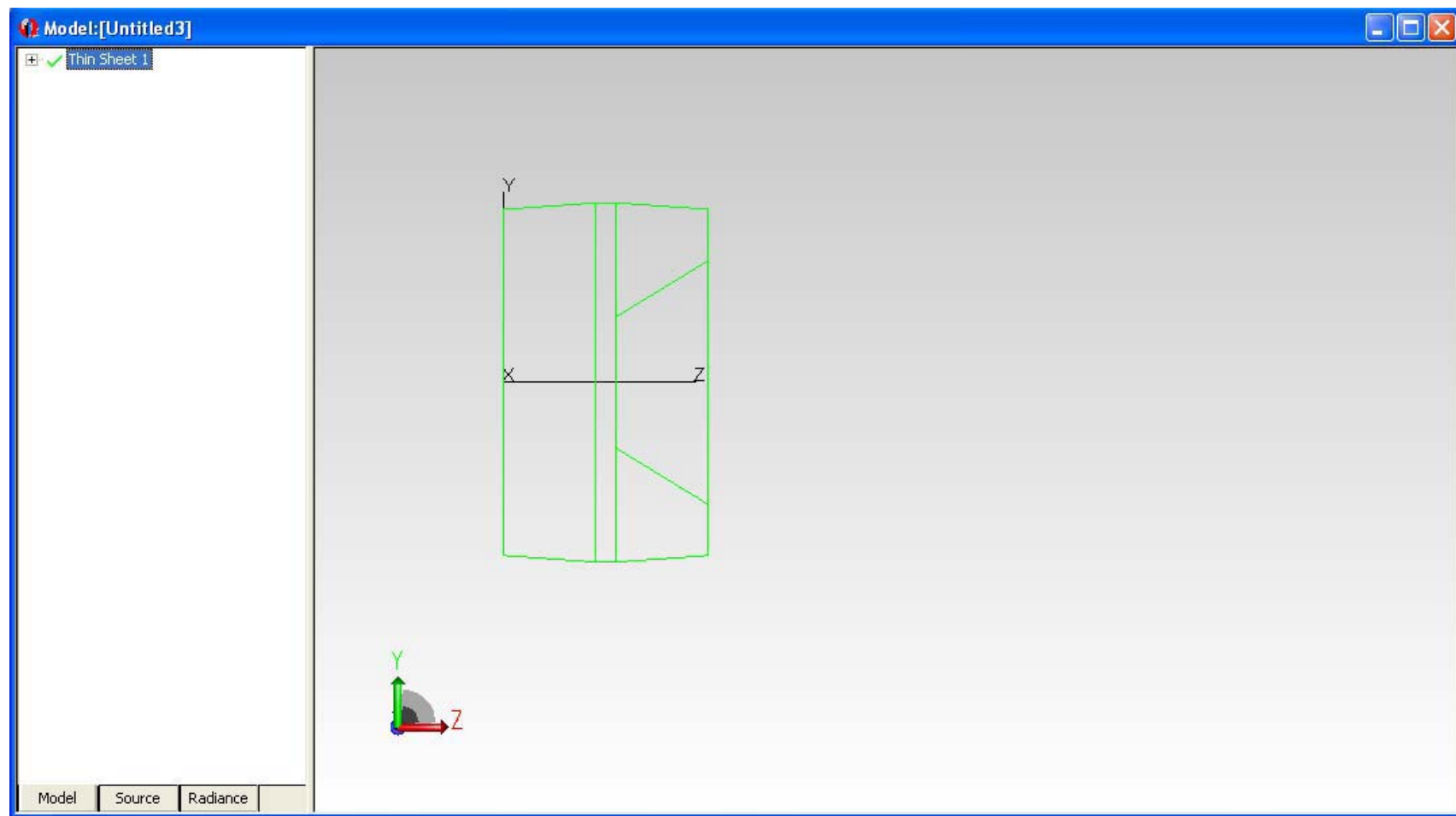
Create a Conical Hole

- Select Insert|Primitive Solid and select the Cylinder/Cone tab.
- Select the Cone option and enter the values shown, then click Insert to create the cone.



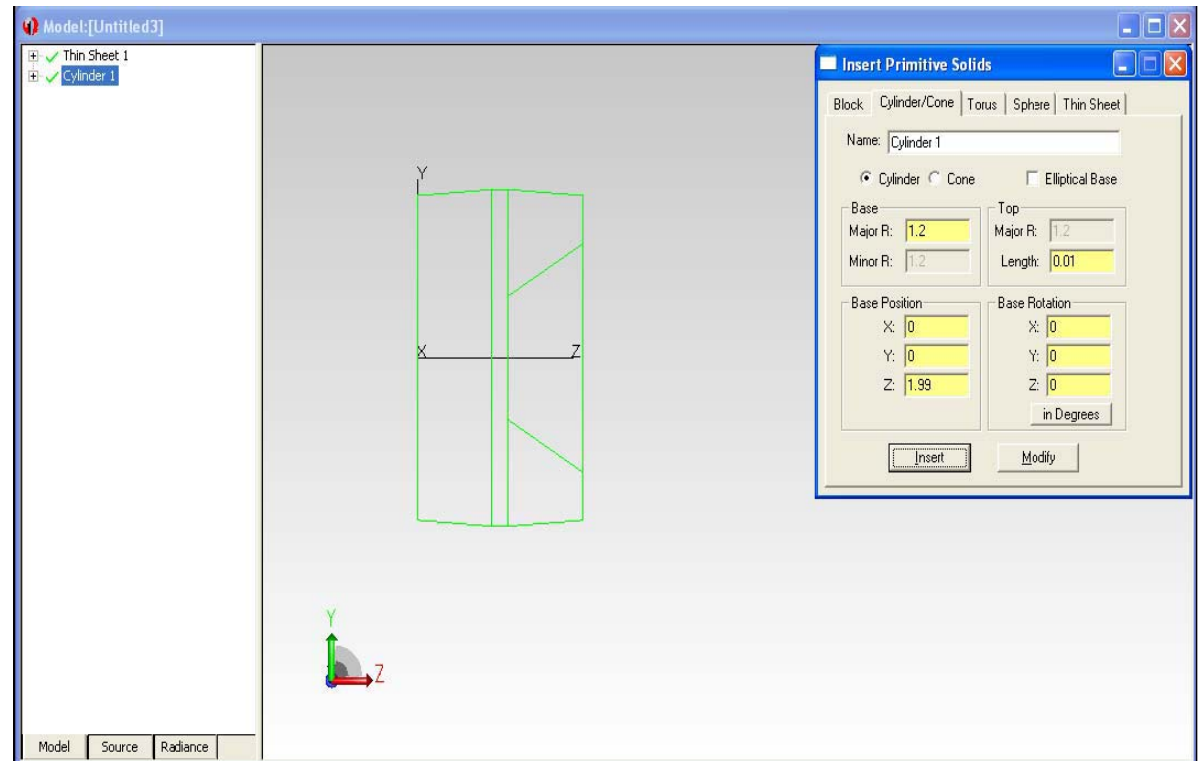
Subtract the Cone from the Package

- Select the Package object from the System Tree. Click on Thin sheet 1.
- Select the Tool object from the System Tree. Use Ctrl+Click on Cone 1.
- The Ctrl key allows you to add the object to the current selection.
- Select Edit|Boolean|Subtract.
- Cone 1 will be removed from the System Tree.



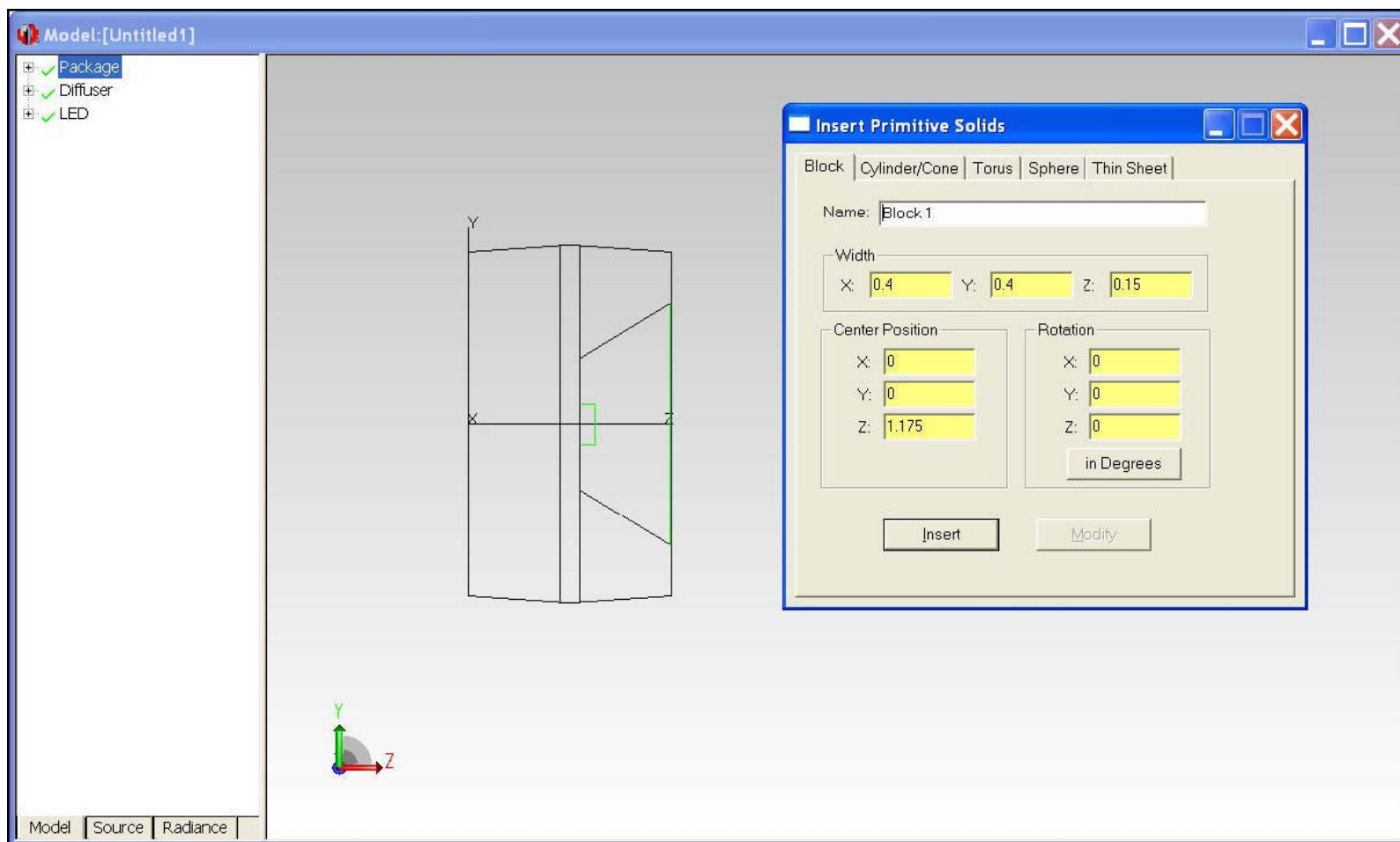
Add a Diffuser

- Select Insert/Primitive Solid, Cylinder/Cone tab.
- Enter the values shown.
- Click Insert to create the cylinder.



Add the LED

- From the Insert/Primitive Solid dialog box, select the Block tab
- Enter the values shown.
- The center of the LED has a Z-value 1.175 to position the block so that it is on the bottom of the conical hole.
- Click Insert to create the block.
- The 3 objects could named as “Package”, “Diffuser”, and “LED”.



Diffusing Surface Property

- Select Define/Edit Property Data/Surface Properties.
- Then Add Property button, enter the property name Lambertian Diffuser and select ABg for the Scatter Model.
- Set the absorptance value to 0.0 (a lossless surface) and select Solve for BTDF from the drop-down list. The BTDF is the scattering portion of the surface property with three coefficients.
- Select File|Save to store the property in the property database.

Surface Property Editor

Catalog: Default Name: Lambertian Diffuser

Description:

Type: Table Scatter: ABg ☐ Retroreflector ☐ Polarization

Temperature (K)	Wavelength (um)	Incident Angle (deg)	Absorptance	Specular Refl	Specular Trans	Integrated BRDF	BRDF A	BRDF B	BRDF g	Integrated BTDF	BTDF A
300	0.5	0	0	0	0	0	0	0.1	0	1	0.35014087480217

Data Points

Sort by...

Add...

Delete...

Solve For: BTDF

Plot Options

Enter New Surface Property

Surface Property Name: Lambertian Diffuser

Adding to Catalog: Default

Scatter Model: ABg

Temperature (Kelvin): 300

Wavelength (microns): 0.5

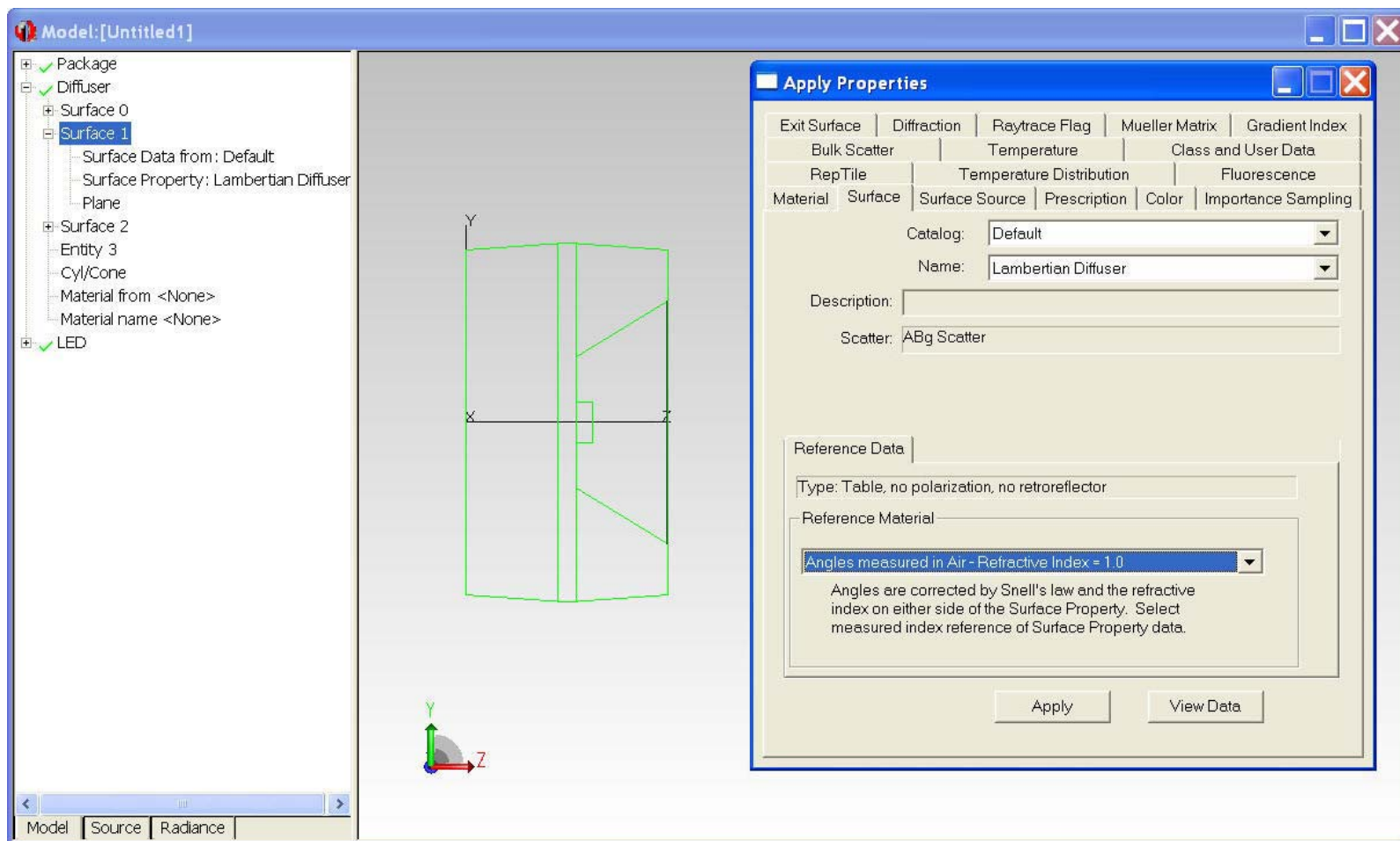
OK Cancel

Grid Plot



Apply Diffuser Surface Property

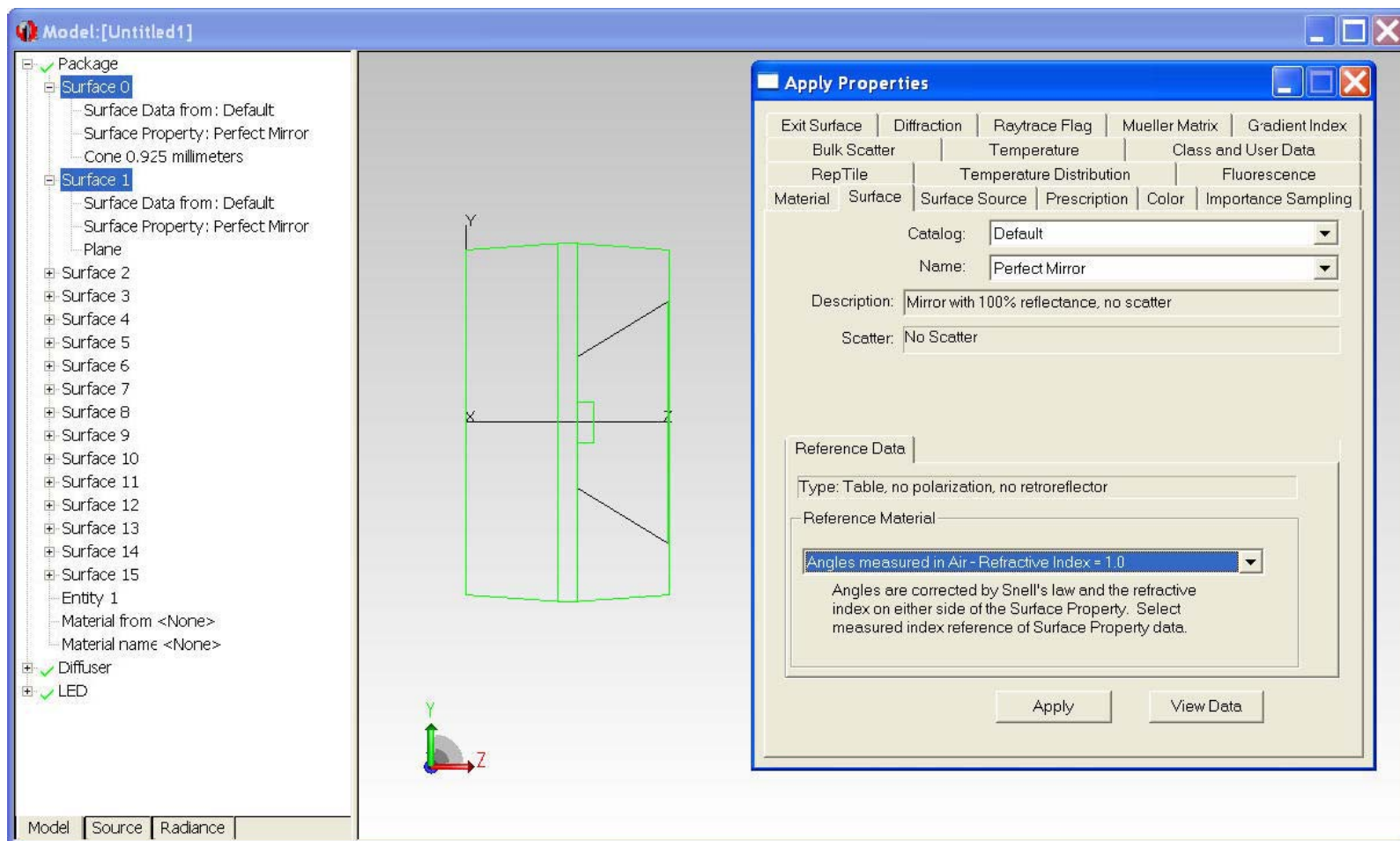
- Define/Apply ,Surface tab
- Select the inner surface of the Diffuser by either:
 - System Tree or
 - Selecting Edit/Select/Surface and clicking on the surface in the model window.
- Select Lambertian Diffuser from the Surface Property Name dropdown list.
- Click Apply to apply the property to the diffuser.





Apply Mirror Surface Property

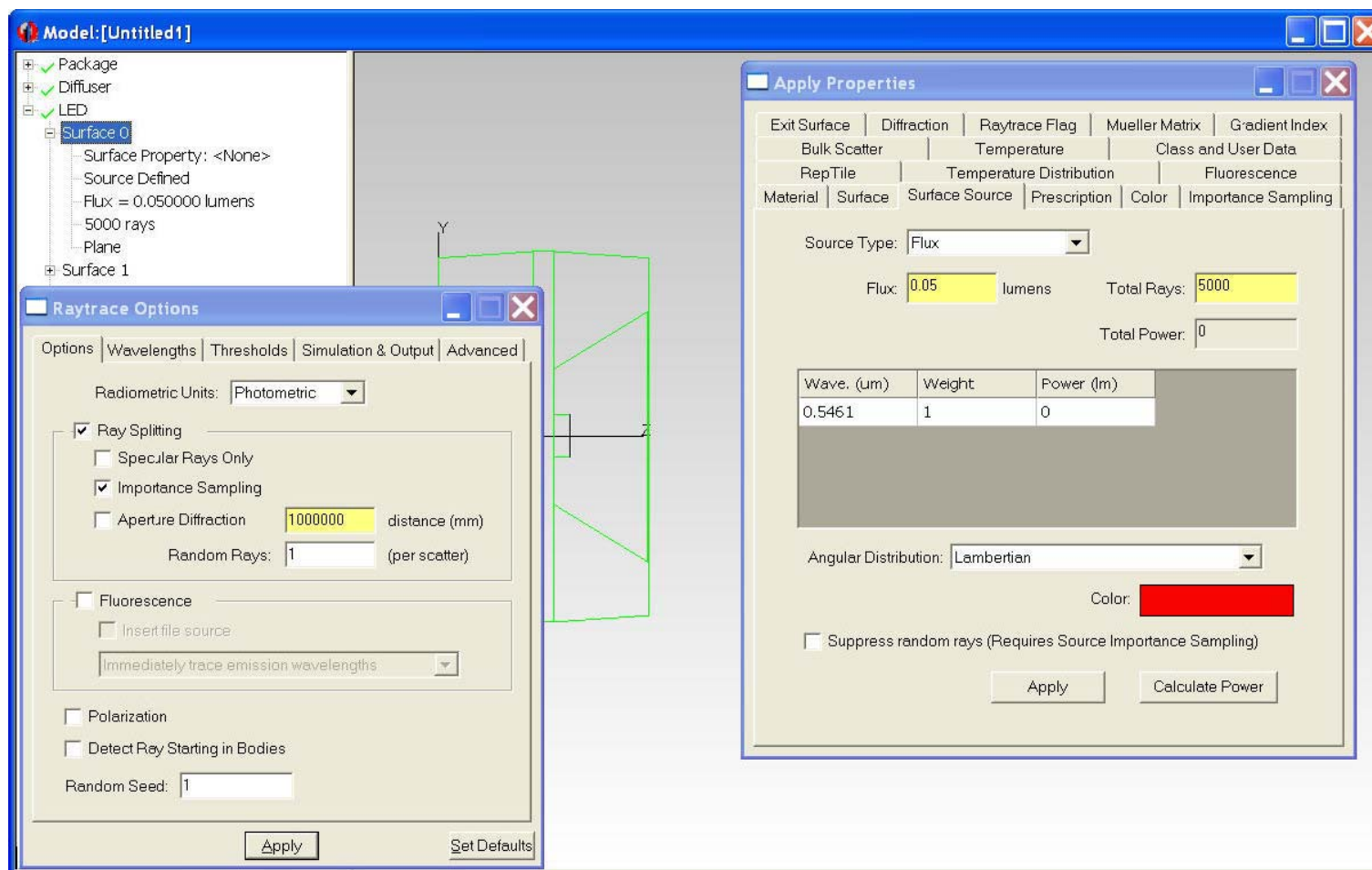
- Select the Package object and select surface 0 and 1. After selecting one surface, add to the selection by holding down the Ctrl key and selecting additional surfaces.
- Select Perfect Mirror from the Surface Property Name drop-down list.
- Click Apply to apply the property to the selected surfaces.



Define LED Source

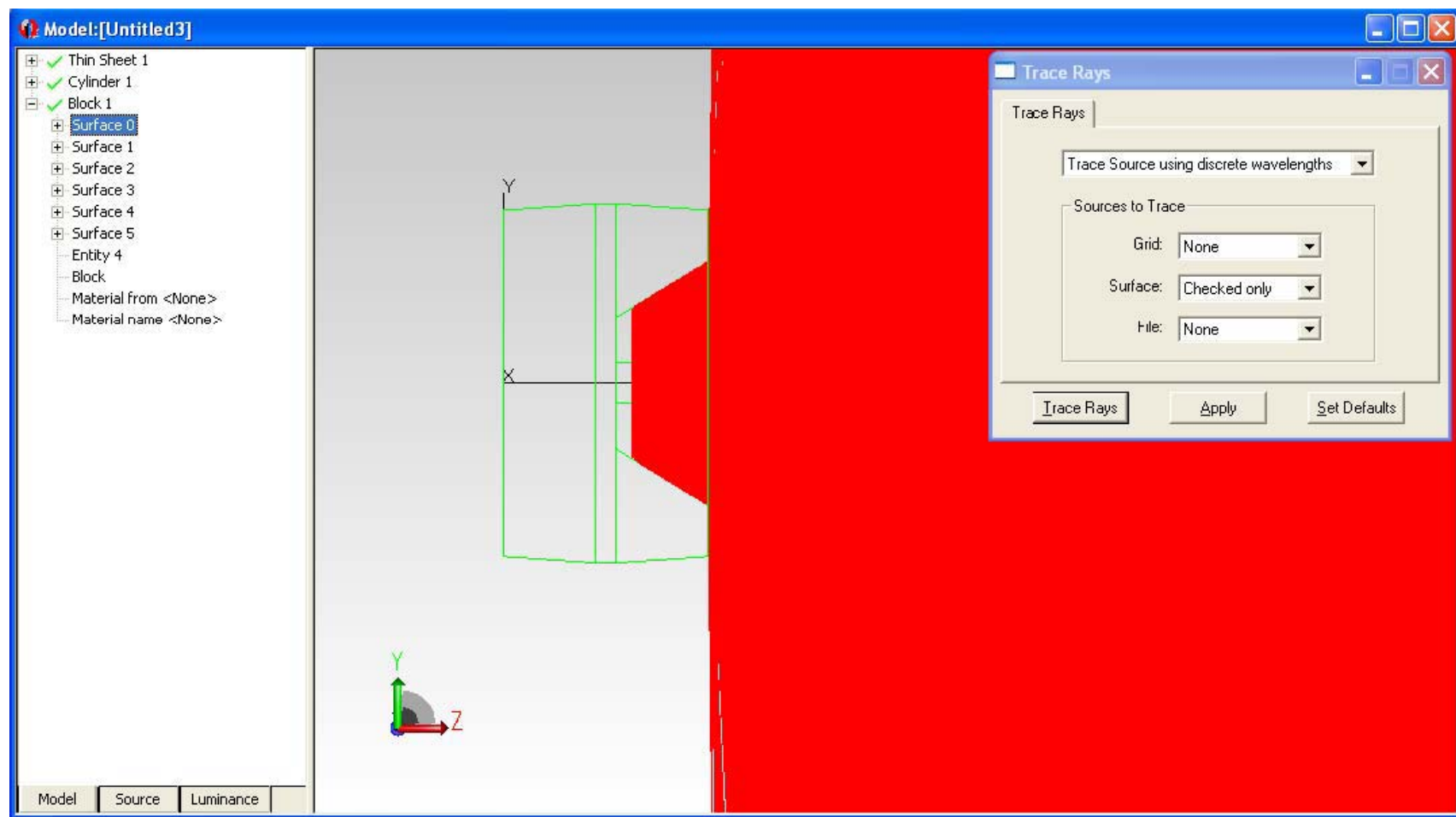
- Select Analysis/Raytrace Options to open the Raytrace Options dialog box.
- On the Options tab, select Photometric for the Radiometric Units type.
- Click Apply and close the dialog box.
- Select the top surface of the LED (surface 0).
- In the Apply Properties dialog box, select the Surface Source tab.
- Enter the values and selections shown.
- Click Apply to create an LED that emits 0.05 lumens in a Lambertian pattern

Conti..



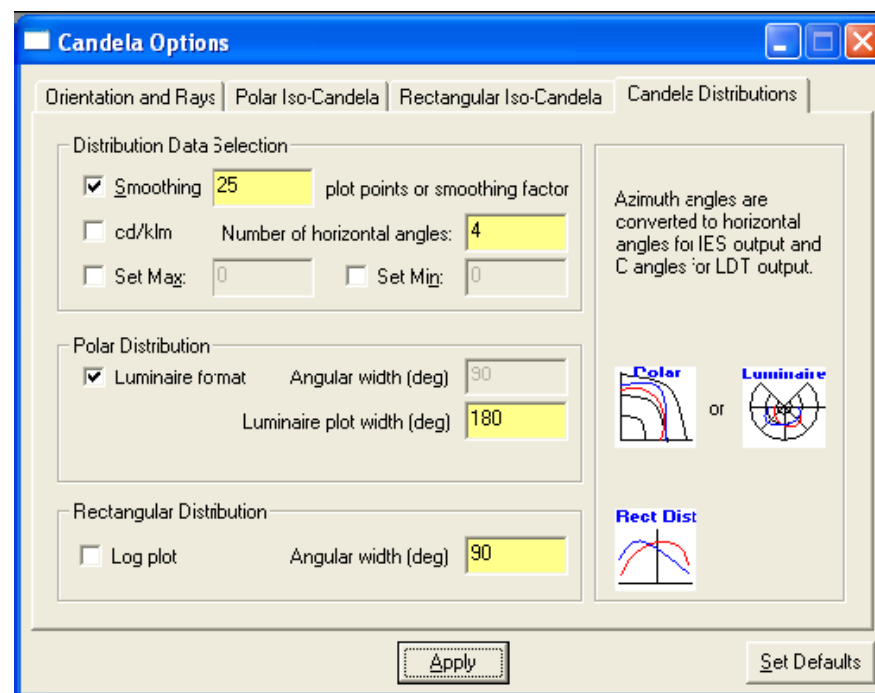
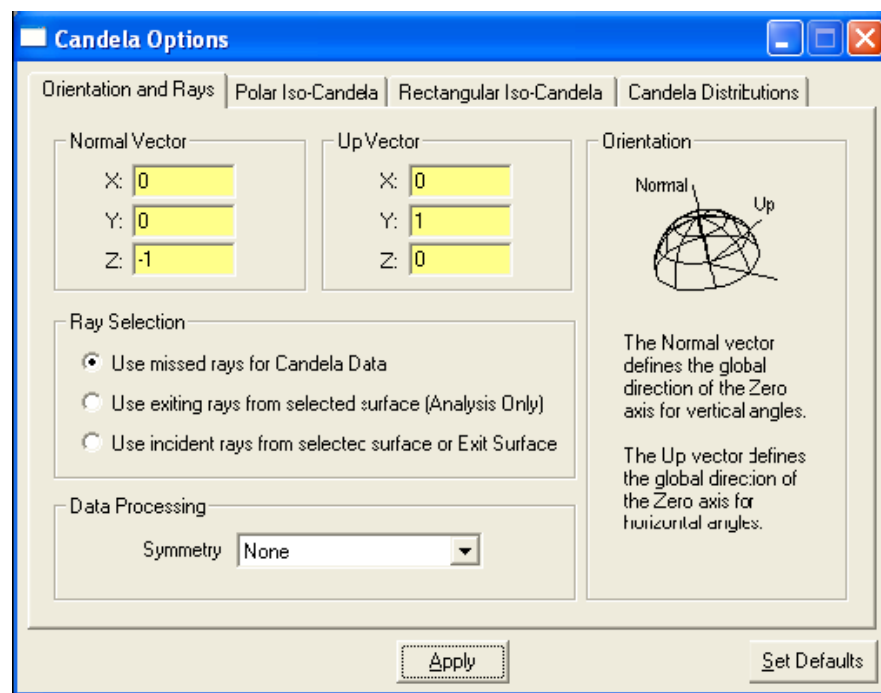
Perform the Ray trace

- selecting Analysis|Trace Rays, selecting “Checked only” for surface, then clicking Trace Rays.
- TracePro will perform an Audit of the model and report any invalid properties or geometry, then the raytrace will start.



Candela Plot Options

- Select Analysis|Candela Options.
- Select the Orientation and Rays tabs.
- Set the Normal and Up vectors as shown in the top illustration.
- Select the Candela Distributions tab and enter the settings shown in the bottom illustration.
- Click Apply to see the changes on the plot.



Display Candela Plot

