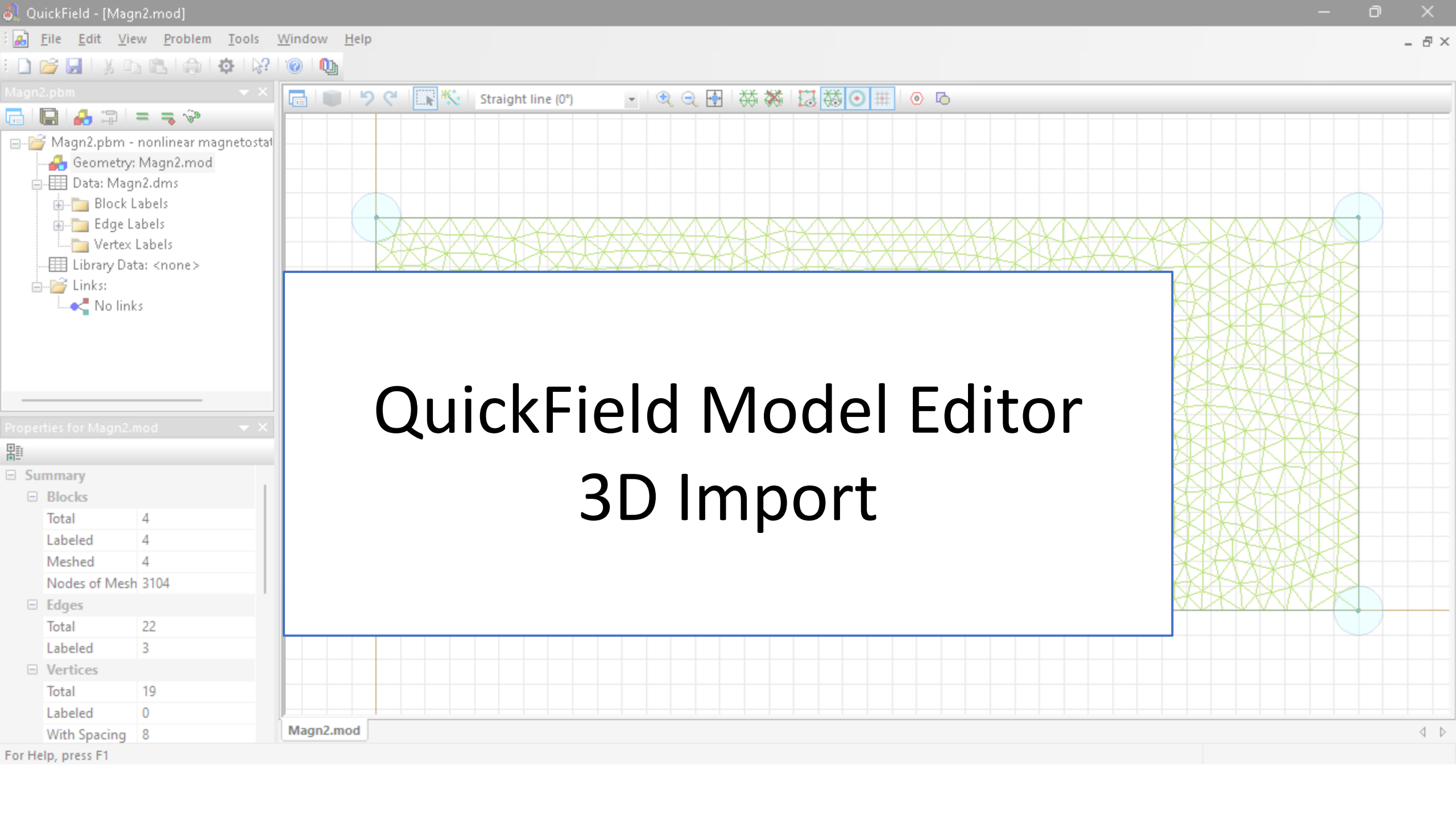
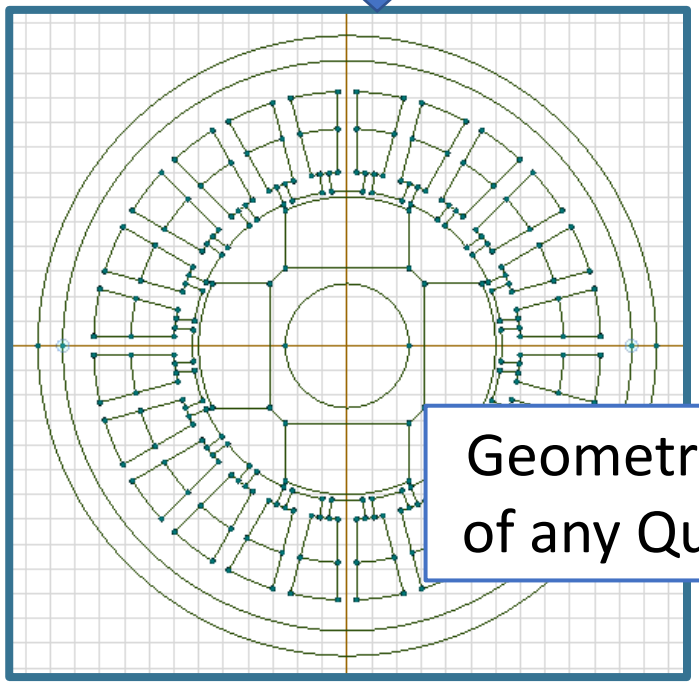
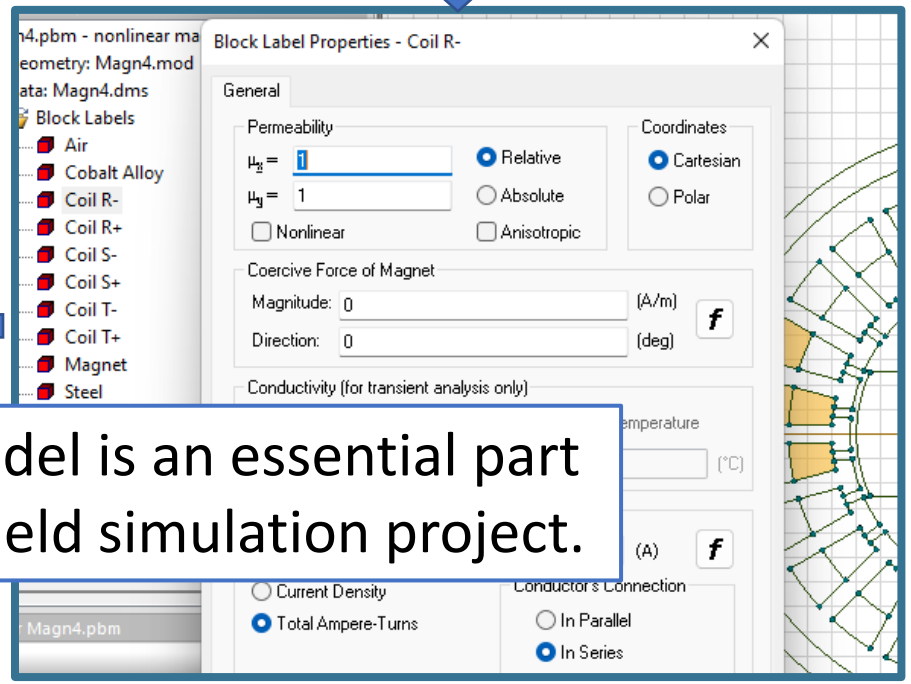

QuickField - [Magn2.mod]
File Edit View Problem Tools Window Help
Magn2.pbm
Magn2.pbm - nonlinear magnetostat
Geometry: Magn2.mod
Data: Magn2.dms
Block Labels
Edge Labels
Vertex Labels
Library Data: <none>
Links:
No links
Properties for Magn2.mod
Summary
Blocks
Total 4
Labeled 4
Meshed 4
Nodes of Mesh 3104
Edges
Total 22
Labeled 3
Vertices
Total 19
Labeled 0
With Spacing 8
Straight line (0°)
Magn2.mod
For Help, press F1
QuickField Model Editor
3D Import

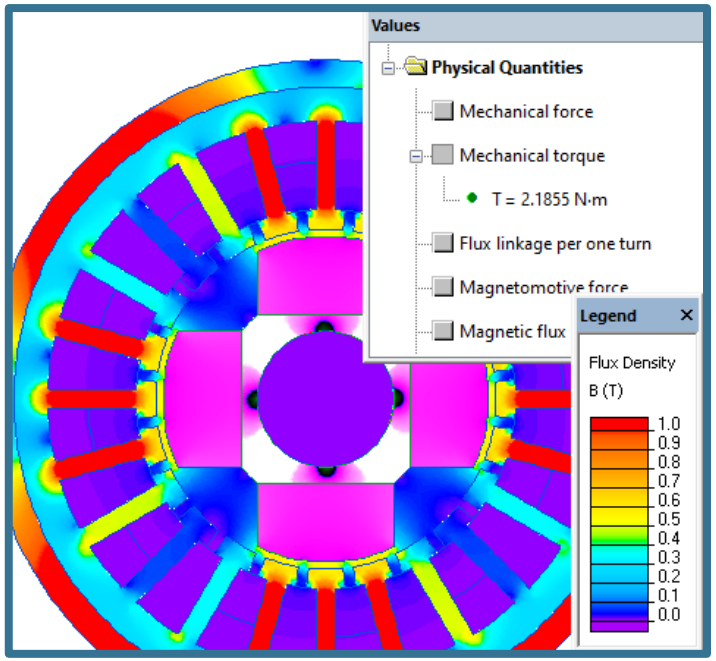
# Problem setup



Model editor

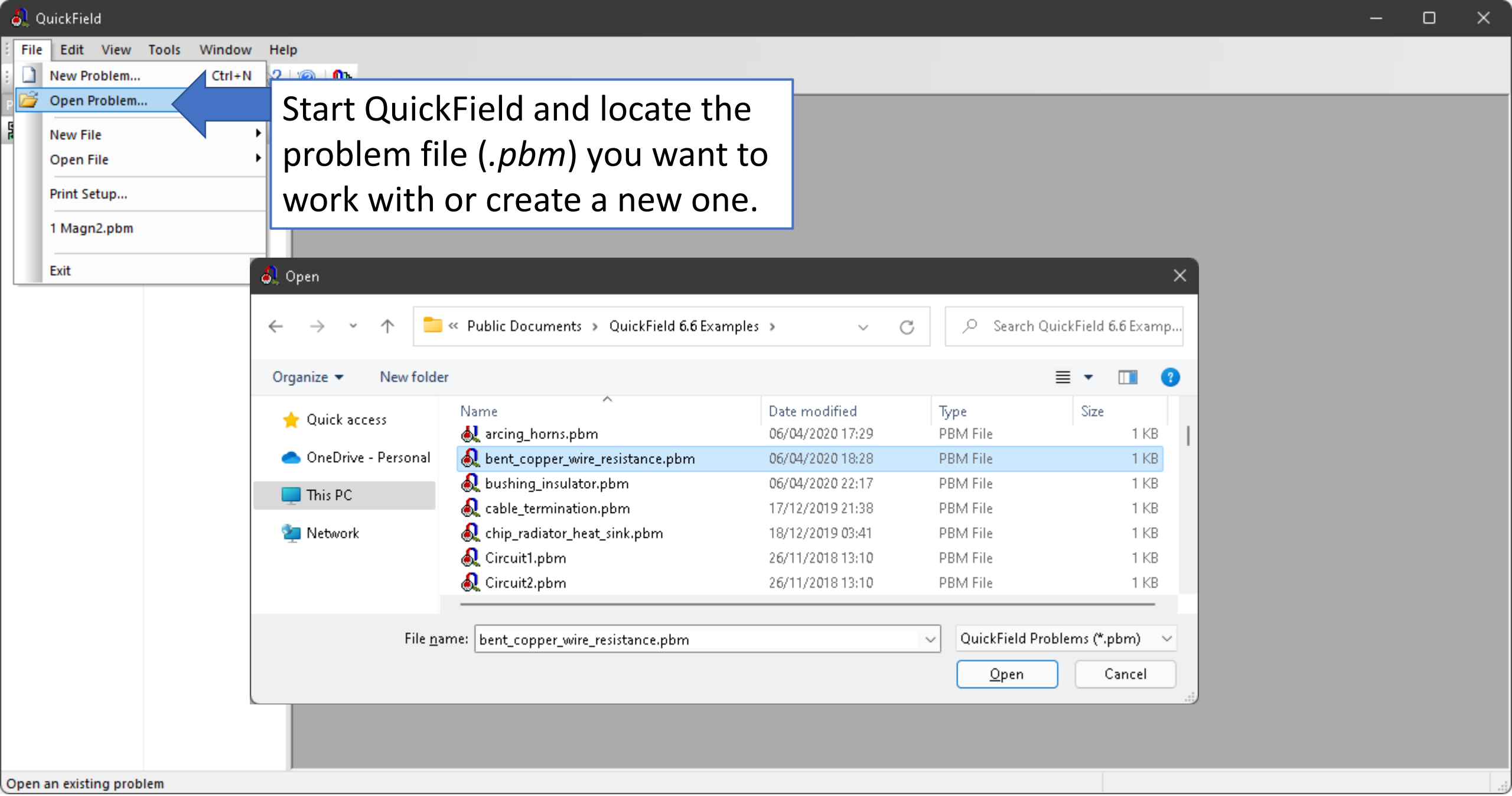



Material physical properties, field sources and boundary conditions




Results analysis

Geometry model is an essential part of any QuickField simulation project.


QuickField
File
Edit
View
Tools
Window
Help
New Problem... Ctrl+N
Open Problem...
New File
Open File
Print Setup...
1 Magn2.pbm
Exit
Start QuickField and locate the problem file (.pbm) you want to work with or create a new one.
Open
Public Documents › QuickField 6.6 Examples ›
Search QuickField 6.6 Examp...
Organize
New folder
Quick access
OneDrive - Personal
This PC
Network
Name
Date modified
Type
Size
arcing_horns.pbm 06/04/2020 17:29 PBM File 1 KB
bent_copper_wire_resistance.pbm 06/04/2020 18:28 PBM File 1 KB
bushing_insulator.pbm 06/04/2020 22:17 PBM File 1 KB
cable_termination.pbm 17/12/2019 21:38 PBM File 1 KB
chip_radiator_heat_sink.pbm 18/12/2019 03:41 PBM File 1 KB
Circuit1.pbm 26/11/2018 13:10 PBM File 1 KB
Circuit2.pbm 26/11/2018 13:10 PBM File 1 KB
File name: bent_copper_wire_resistance.pbm
QuickField Problems (*.pbm)
Open
Cancel
Open an existing problem

QuickField

File Edit View Problem Tools Window Help

bent_copper_wire_resistance.pbm

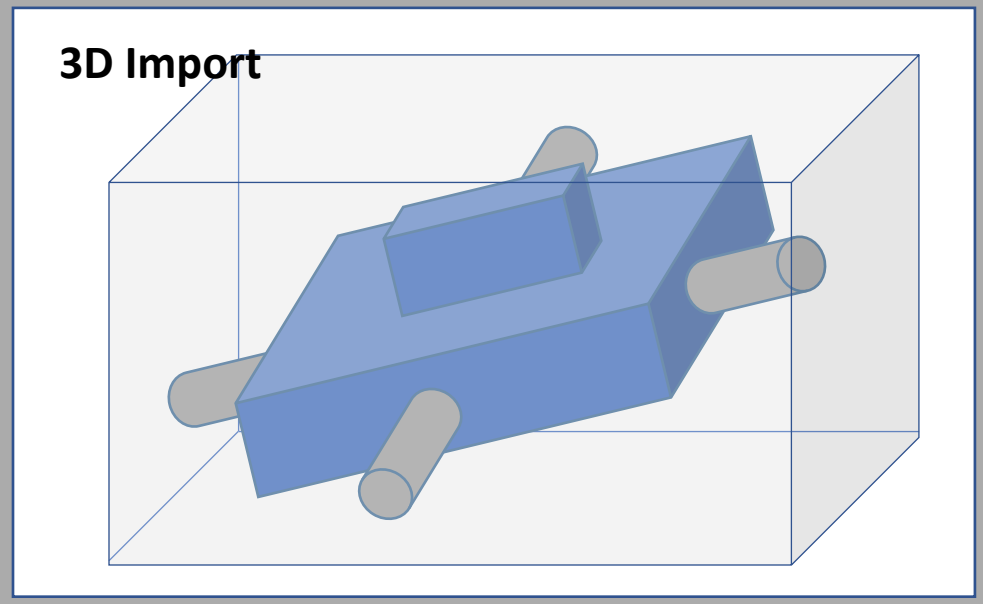
- bent_copper_wire_resistance.pbm - D
  - Geometry: Bent_copper_wire_resi
  - Data: Bent_copper_wire_resistanc
  - Library Data: <none>
  - Links:
    - No links

Properties for bent_copper_wire_resi...

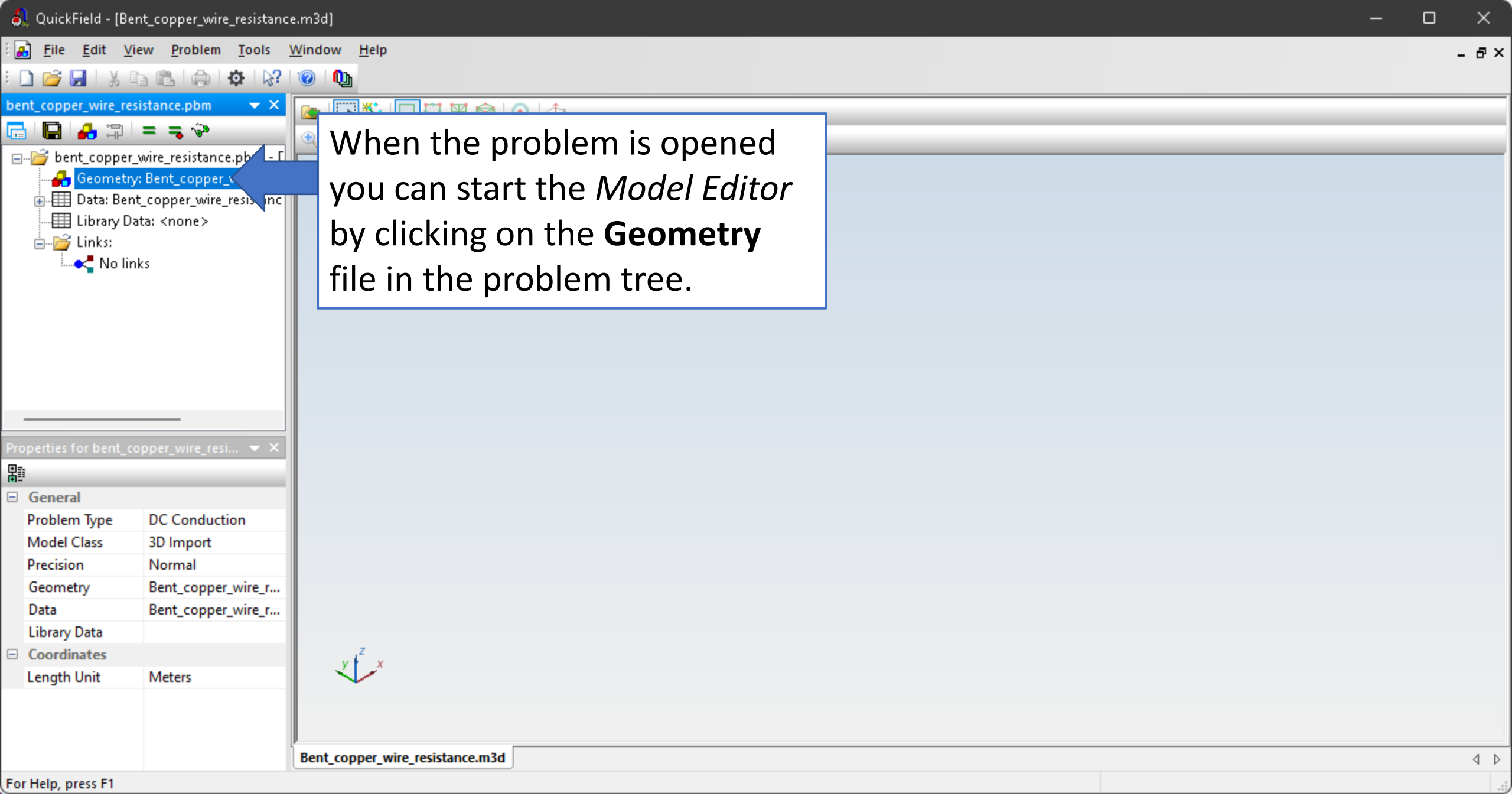
| | |
|---|---|
| **General** | |
| Problem Type | DC Conduction |
| Model Class | 3D Import |
| Precision | |
| Geometry | |
| Data | |
| Library Data | |
| **Coordinates** | |
| Length Unit | Meters |

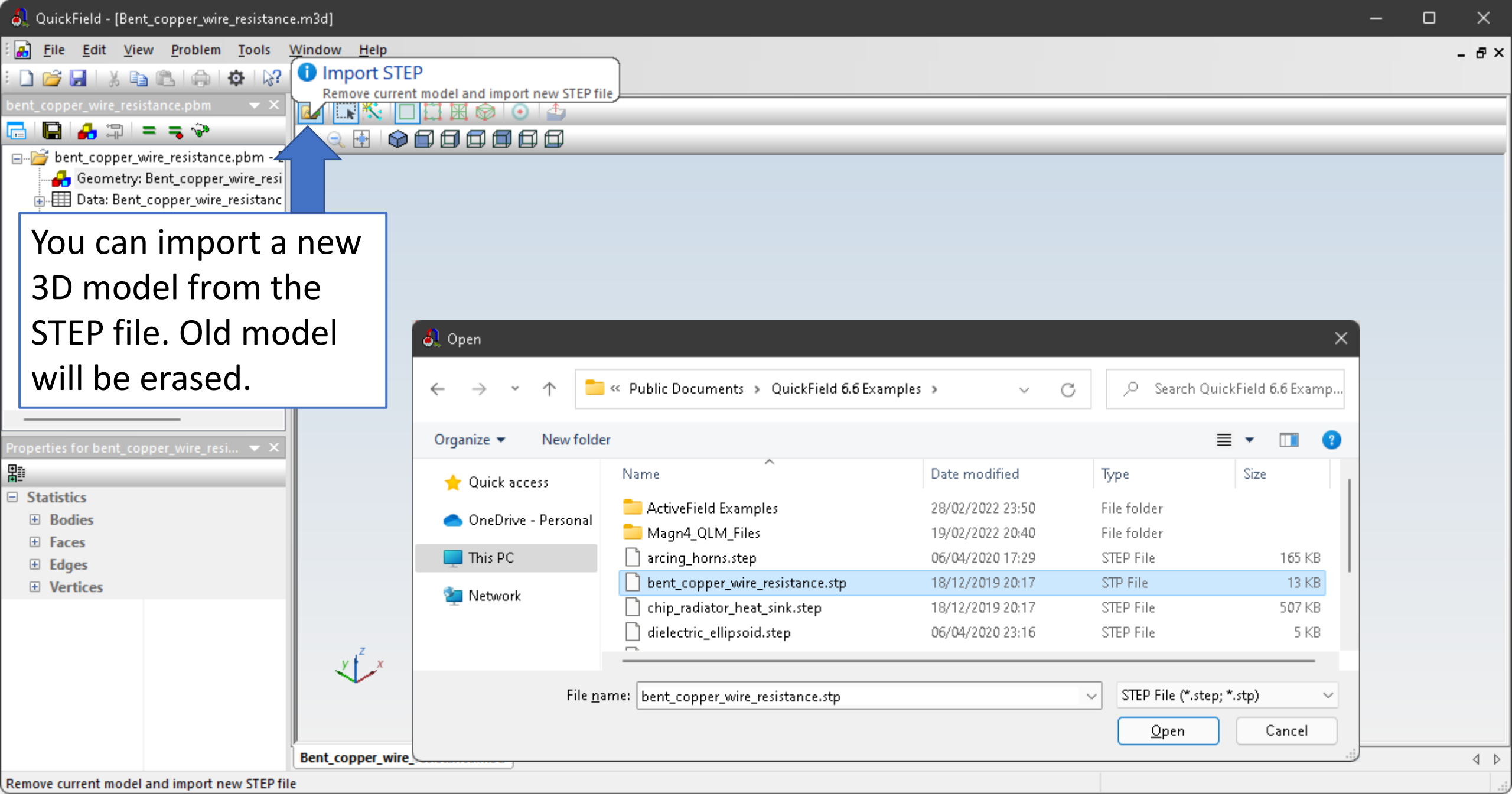
Plane-parallel
Axisymmetric
3D Extrusion
3D Import

Electrostatics, DC Conduction and Steady-state Heat transfer problems support 3D Import model class.




For Help, press F1


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pb
Geometry: Bent_copper_
Data: Bent_copper_wire_resi
Library Data: <none>
Links:
No links
When the problem is opened you can start the *Model Editor* by clicking on the **Geometry** file in the problem tree.
Properties for bent_copper_wire_resi...
General
Problem Type DC Conduction
Model Class 3D Import
Precision Normal
Geometry Bent_copper_wire_r...
Data Bent_copper_wire_r...
Library Data
Coordinates
Length Unit Meters
Bent_copper_wire_resistance.m3d
For Help, press F1


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
Import STEP
Remove current model and import new STEP file
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm -
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
You can import a new 3D model from the STEP file. Old model will be erased.
Properties for bent_copper_wire_resi...
Statistics
Bodies
Faces
Edges
Vertices
Open
« Public Documents › QuickField 6.6 Examples ›
Search QuickField 6.6 Examp...
Organize
New folder
Quick access
OneDrive - Personal
This PC
Network
Name
Date modified
Type
Size
ActiveField Examples 28/02/2022 23:50 File folder
Magn4_QLM_Files 19/02/2022 20:40 File folder
arcing_horns.step 06/04/2020 17:29 STEP File 165 KB
bent_copper_wire_resistance.stp 18/12/2019 20:17 STP File 13 KB
chip_radiator_heat_sink.step 18/12/2019 20:17 STEP File 507 KB
dielectric_ellipsoid.step 06/04/2020 23:16 STEP File 5 KB
File name: bent_copper_wire_resistance.stp
STEP File (*.step; *.stp)
Open
Cancel
Remove current model and import new STEP file

QuickField - [Bent_copper_wire_resistance.m3d]

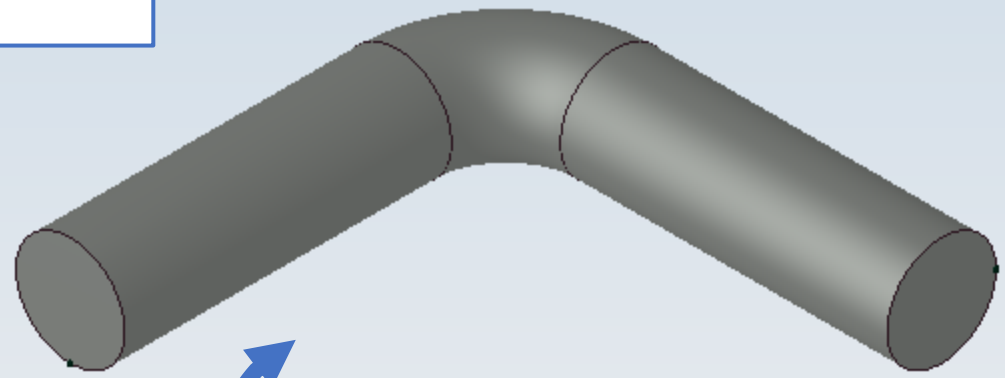
File Edit View Problem Tools Windo

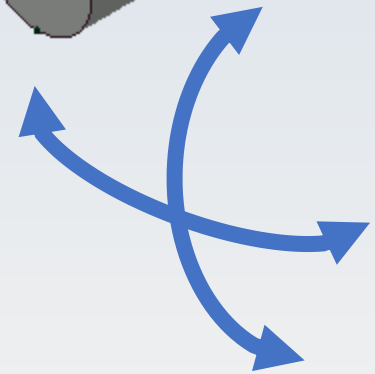
**Rotate and Pan**
Switch to rotate and pan mode. Use the mouse wheel to zoom; press left mouse button to rotate.

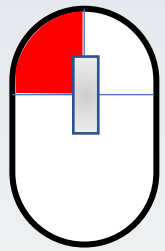
bent_copper_wire_resistance.pbm

- bent_copper_wire_resistance.pbm - [
  - Geometry: Bent_copper_wire_resi
  - Data: Bent_copper_wire_resistanc
  - Library Data: <none>
  - Links:
    - No links

You can rotate with the LEFT mouse pressed







Properties for bent_copper_wire_resi...

| | |
|---|---|
| **Background Region** | |
| Enabled | No |
| **Statistics** | |
| Bodies | |
| Faces | |
| Edges | |
| Vertices | |
| Nodes of Mesh | 81 |

Bent_copper_wire_resistance.m3d

Switch to rotate and pan mode. Use the mouse wheel to zoom; press left mouse button to rotate.

QuickField - [Bent_copper_wire_resistance.m3d]

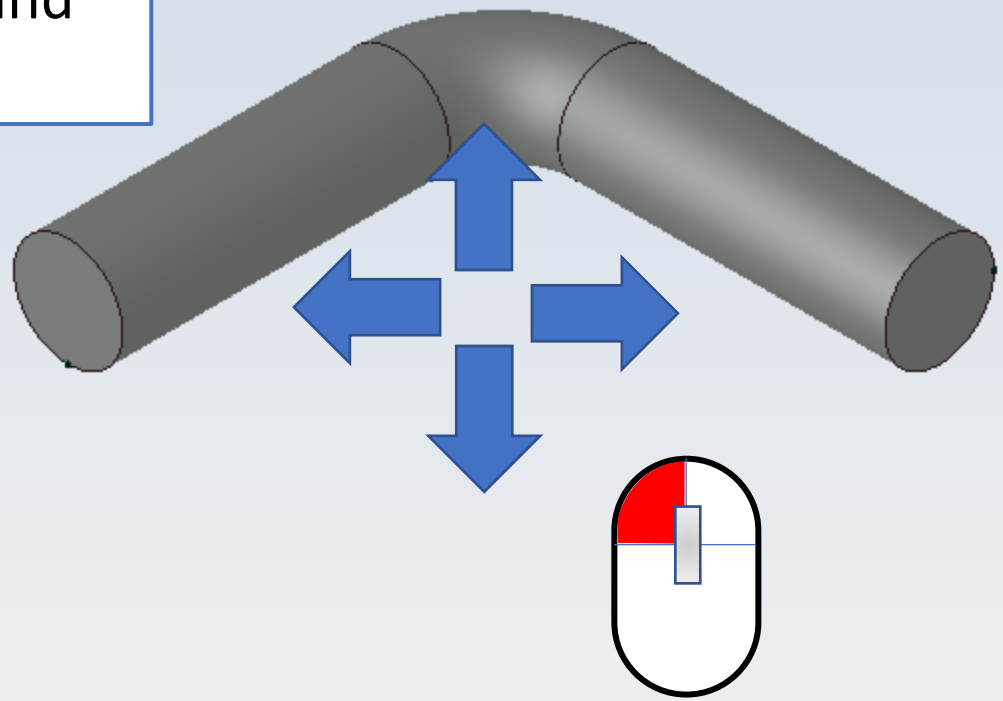
File Edit View Problem Tools Windo

**Rotate and Pan**
Switch to rotate and pan mode. Use the mouse wheel to zoom; press left mouse button to rotate.

bent_copper_wire_resistance.pbm

- bent_copper_wire_resistance.pbm - [
  - Geometry: Bent_copper_wire_resi
  - Data: Bent_copper_wire_resistanc
  - Library Data: <none>
  - Links:
    - No links

You can pane with the LEFT mouse button and SHIFT key pressed

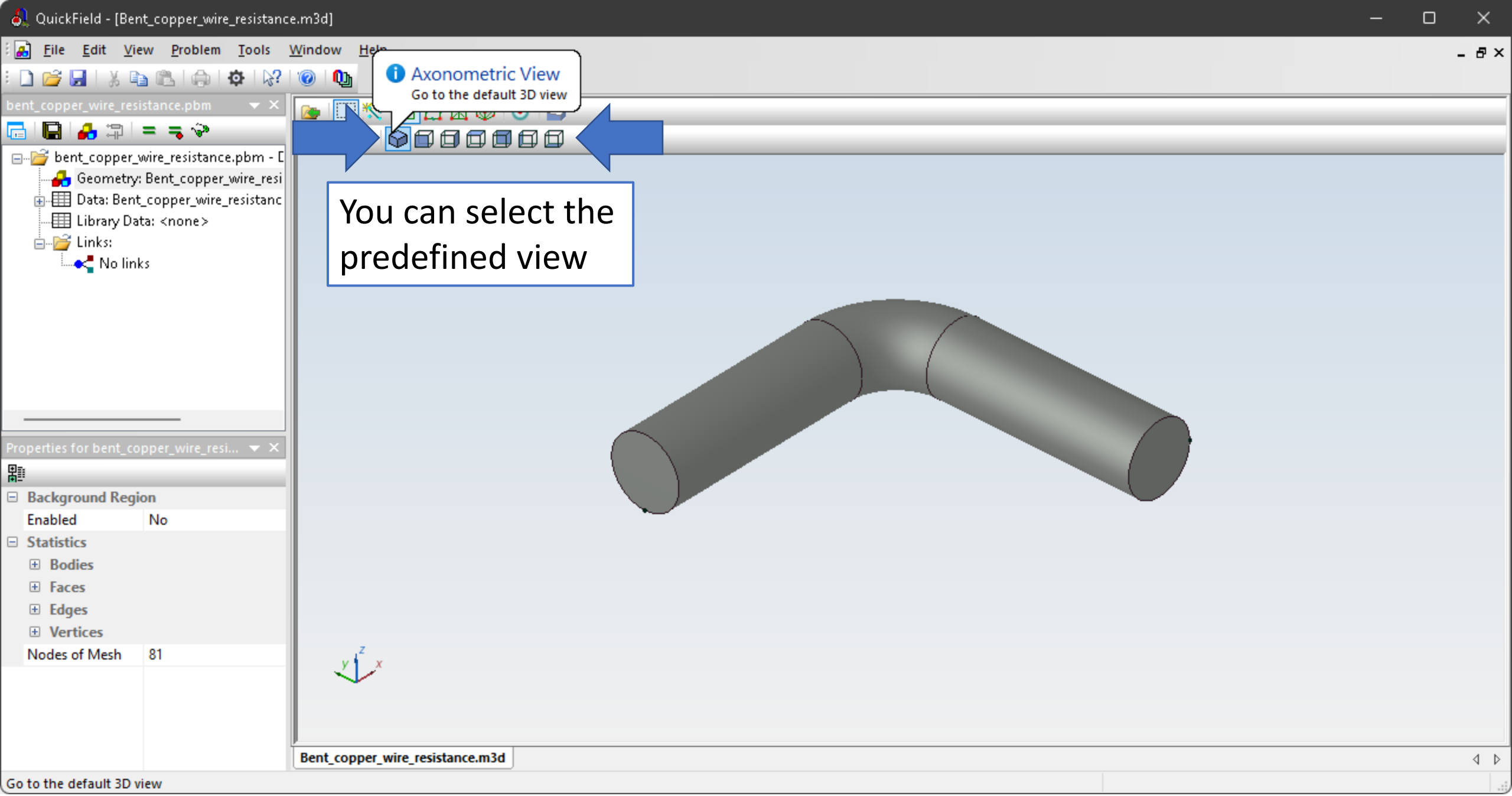


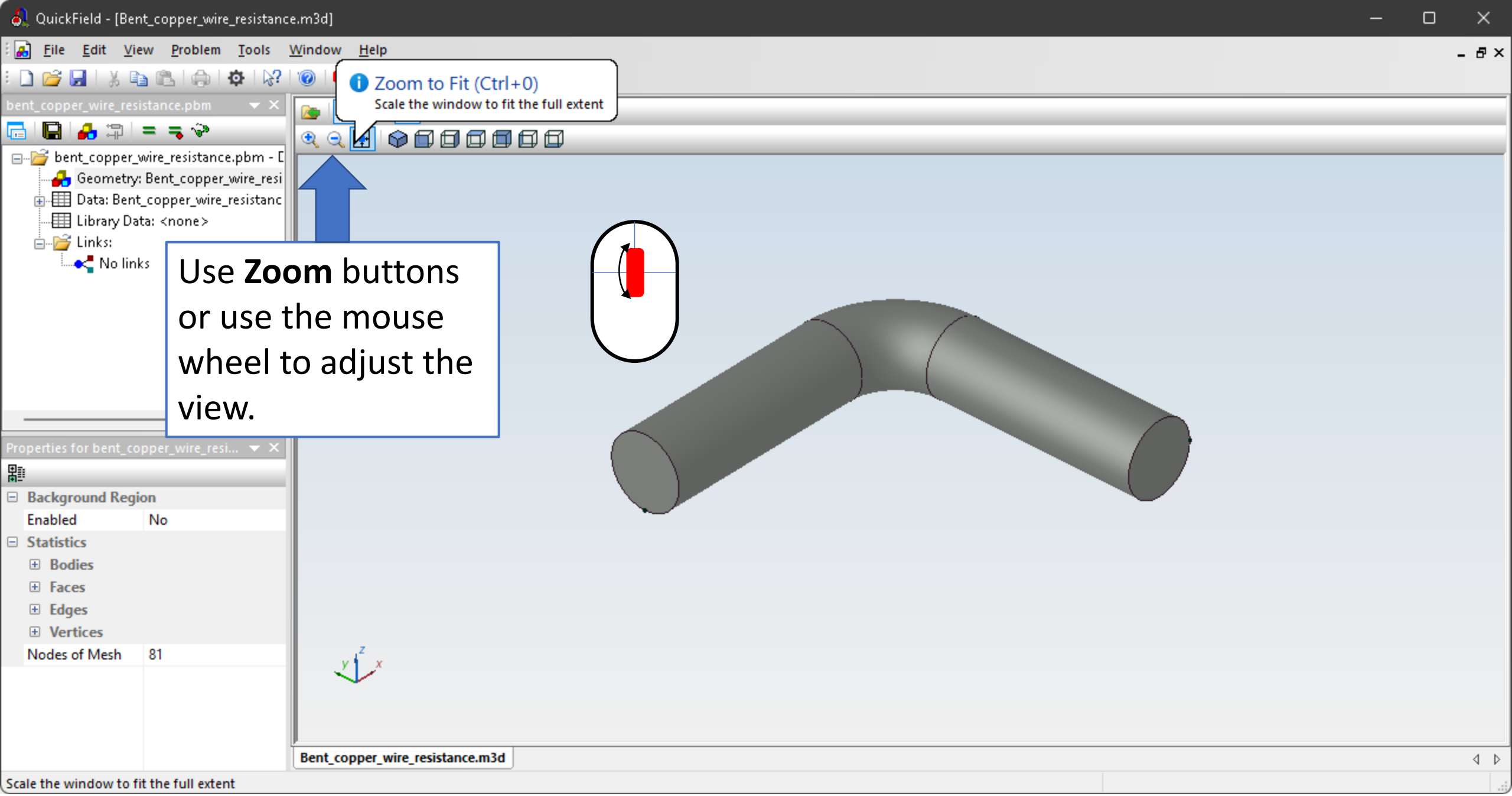
Properties for bent_copper_wire_resi...

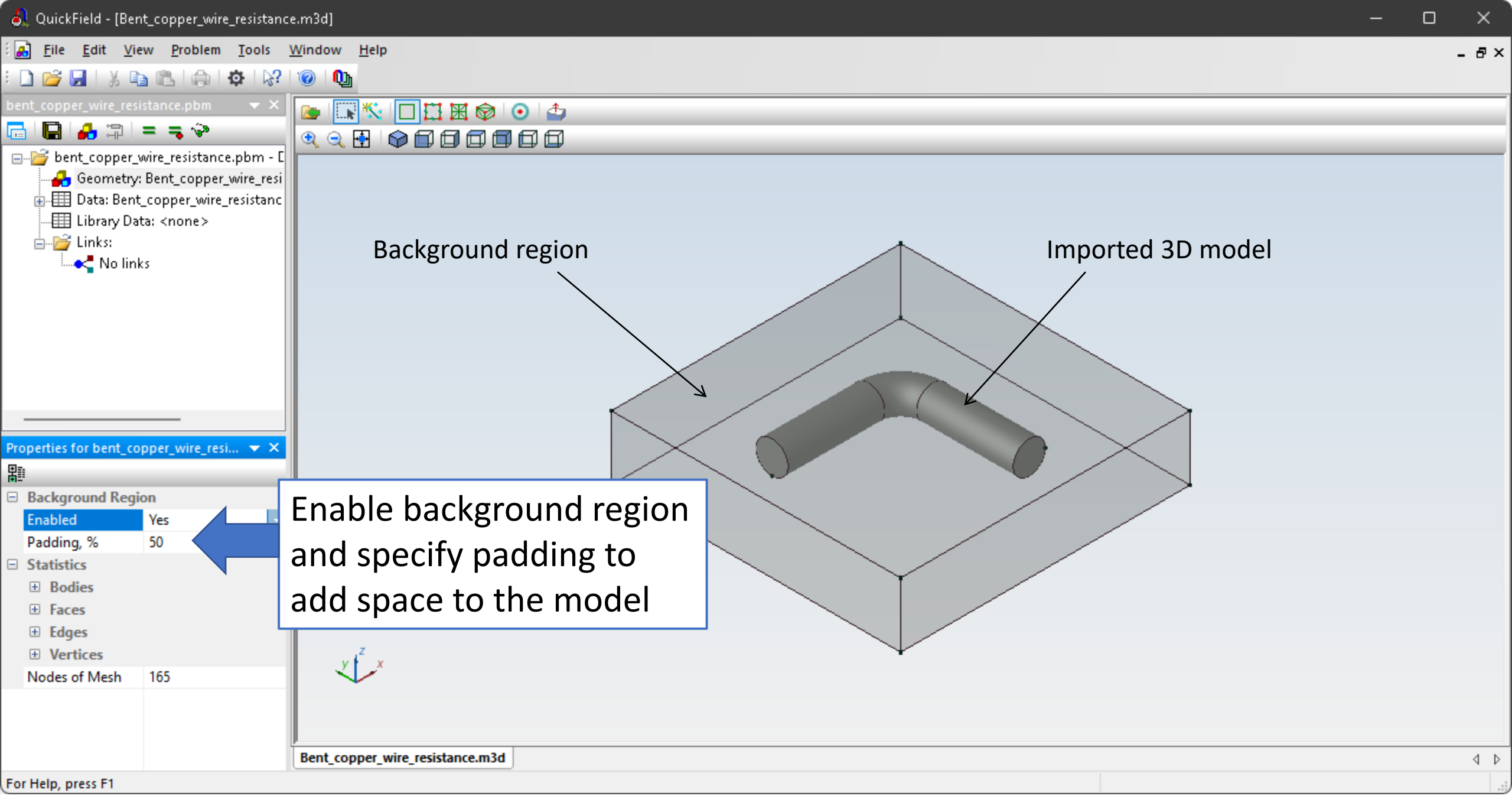
| | |
|---|---|
| **Background Region** | |
| Enabled | No |
| **Statistics** | |
| Bodies | |
| Faces | |
| Edges | |
| Vertices | |
| Nodes of Mesh | 81 |

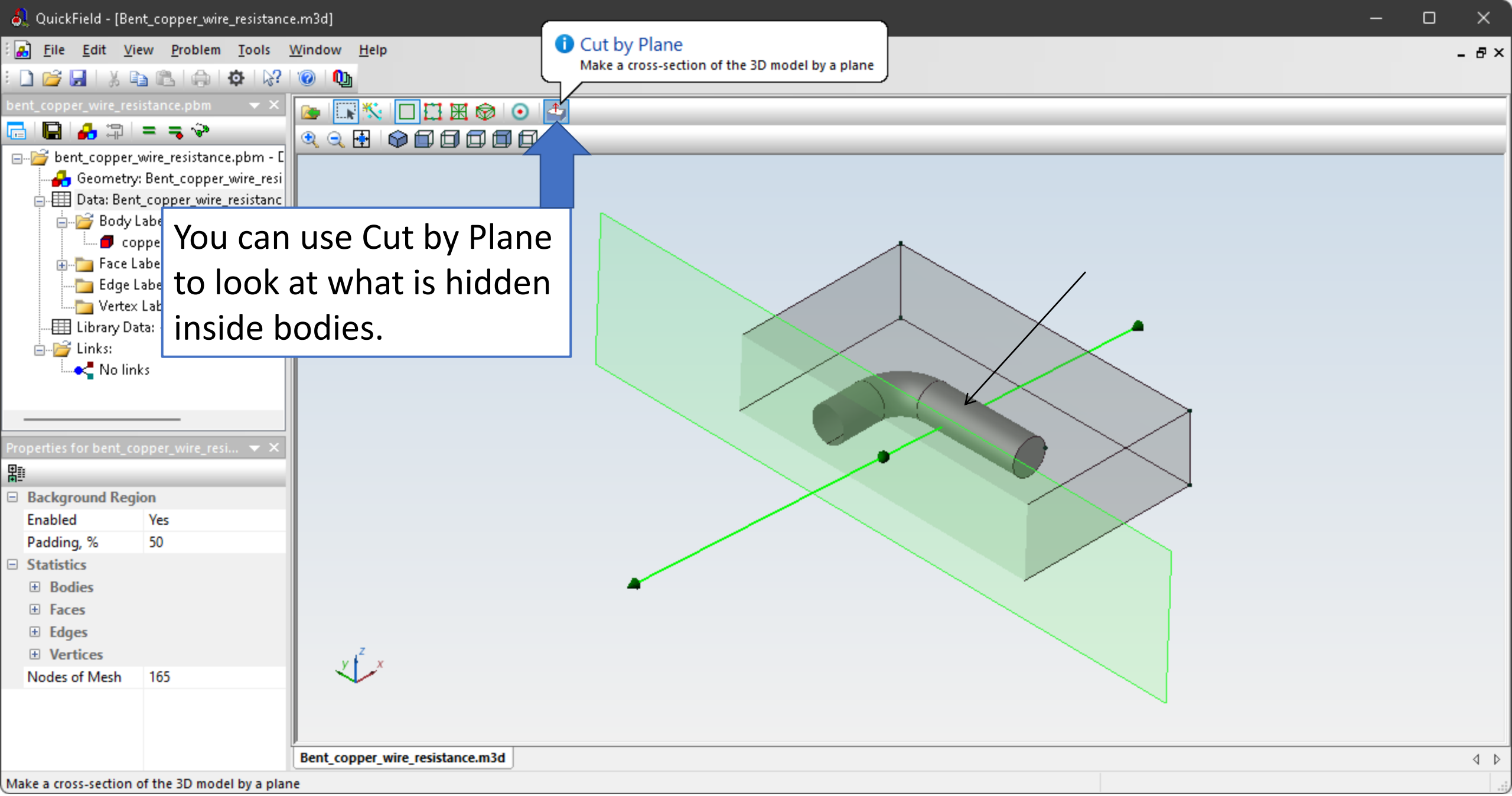
Bent_copper_wire_resistance.m3d

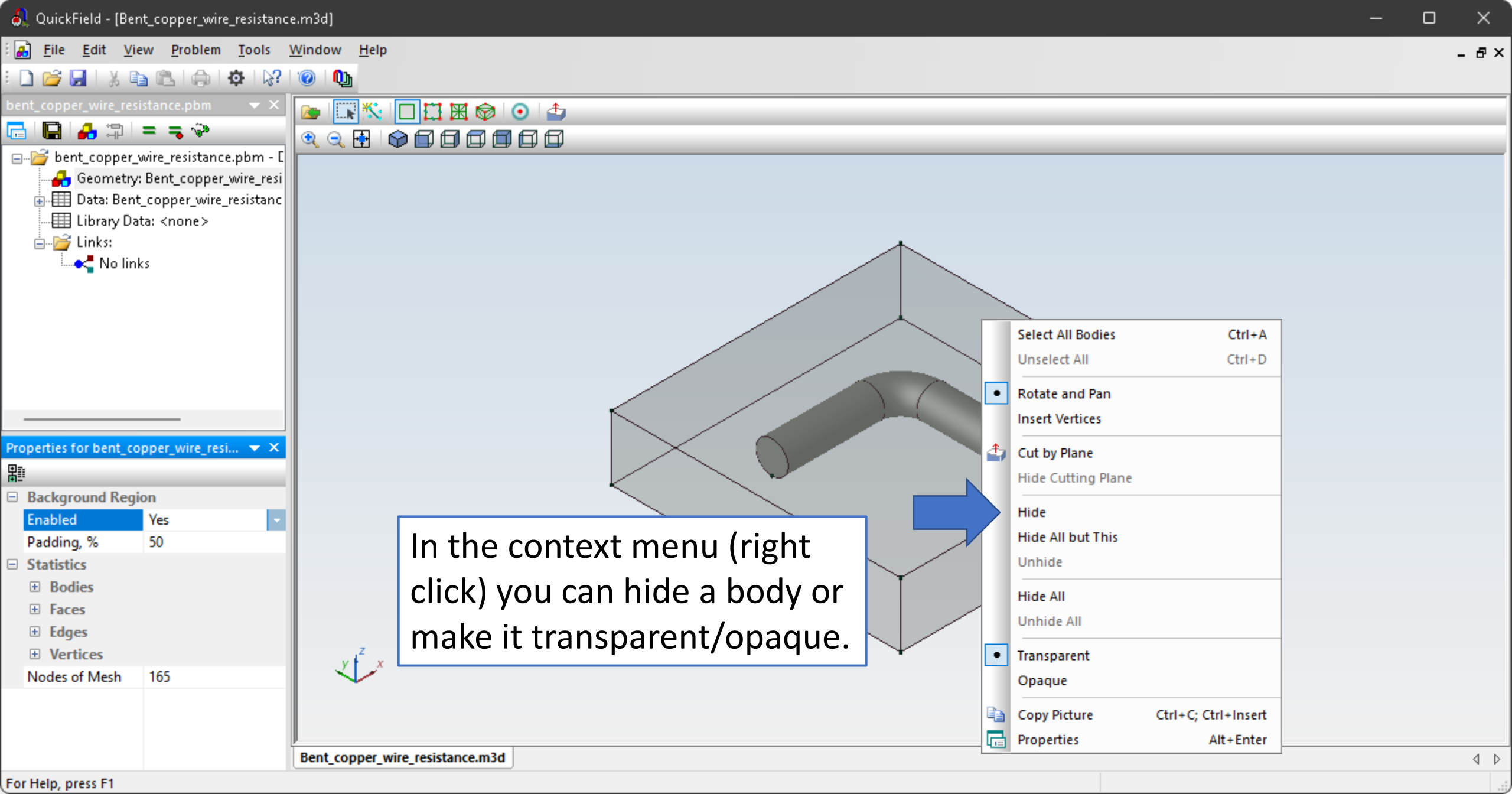
Switch to rotate and pan mode. Use the mouse wheel to zoom; press left mouse button to rotate.

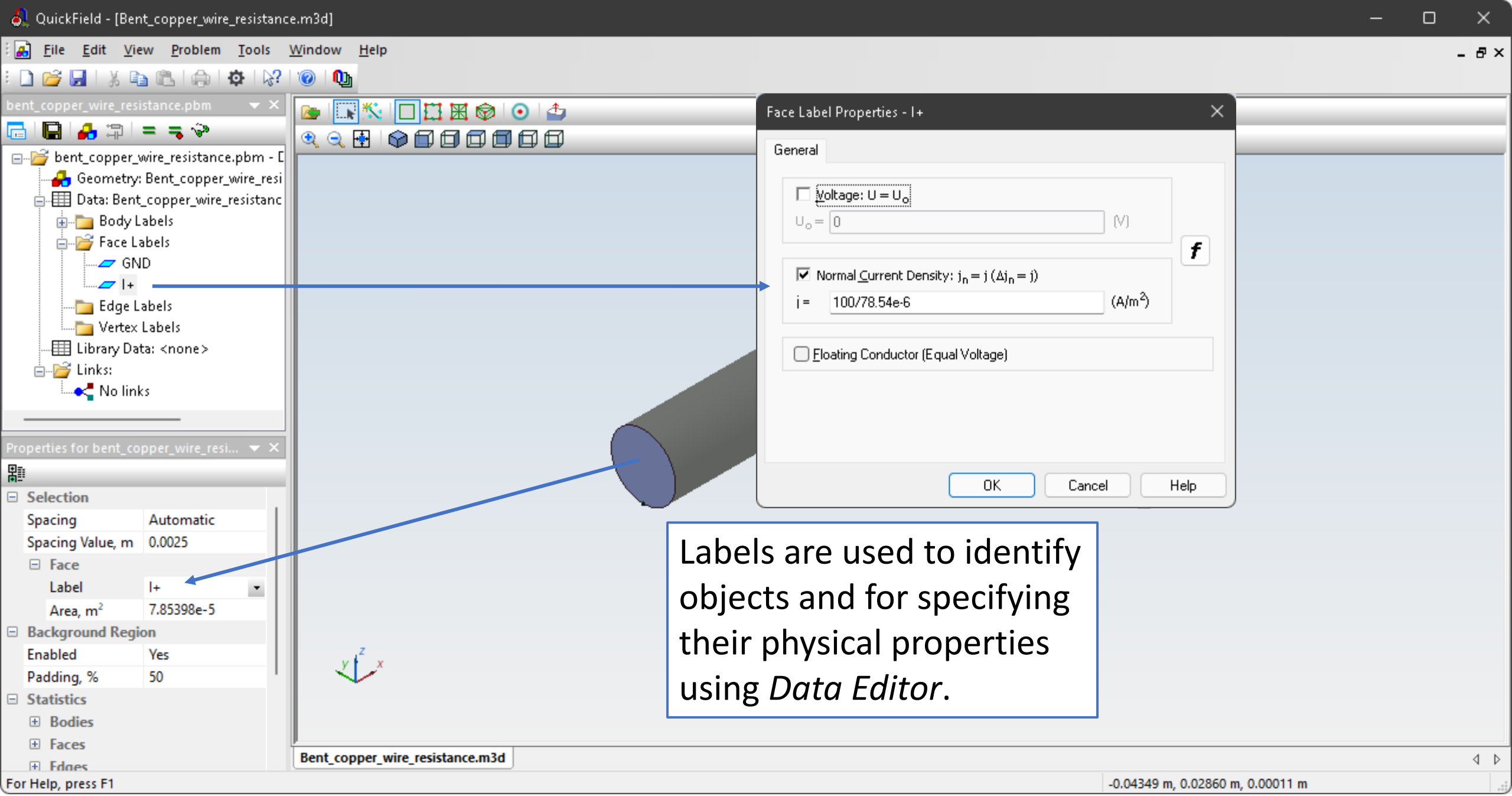

QuickField - [Bent_copper_wire_resistance.m3d]
File
Edit
View
Problem
Tools
Window
Help
Axonometric View
Go to the default 3D view
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - [
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Library Data: <none>
Links:
No links
You can select the predefined view
Properties for bent_copper_wire_resi...
Background Region
Enabled
No
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh
81
Bent_copper_wire_resistance.m3d
Go to the default 3D view

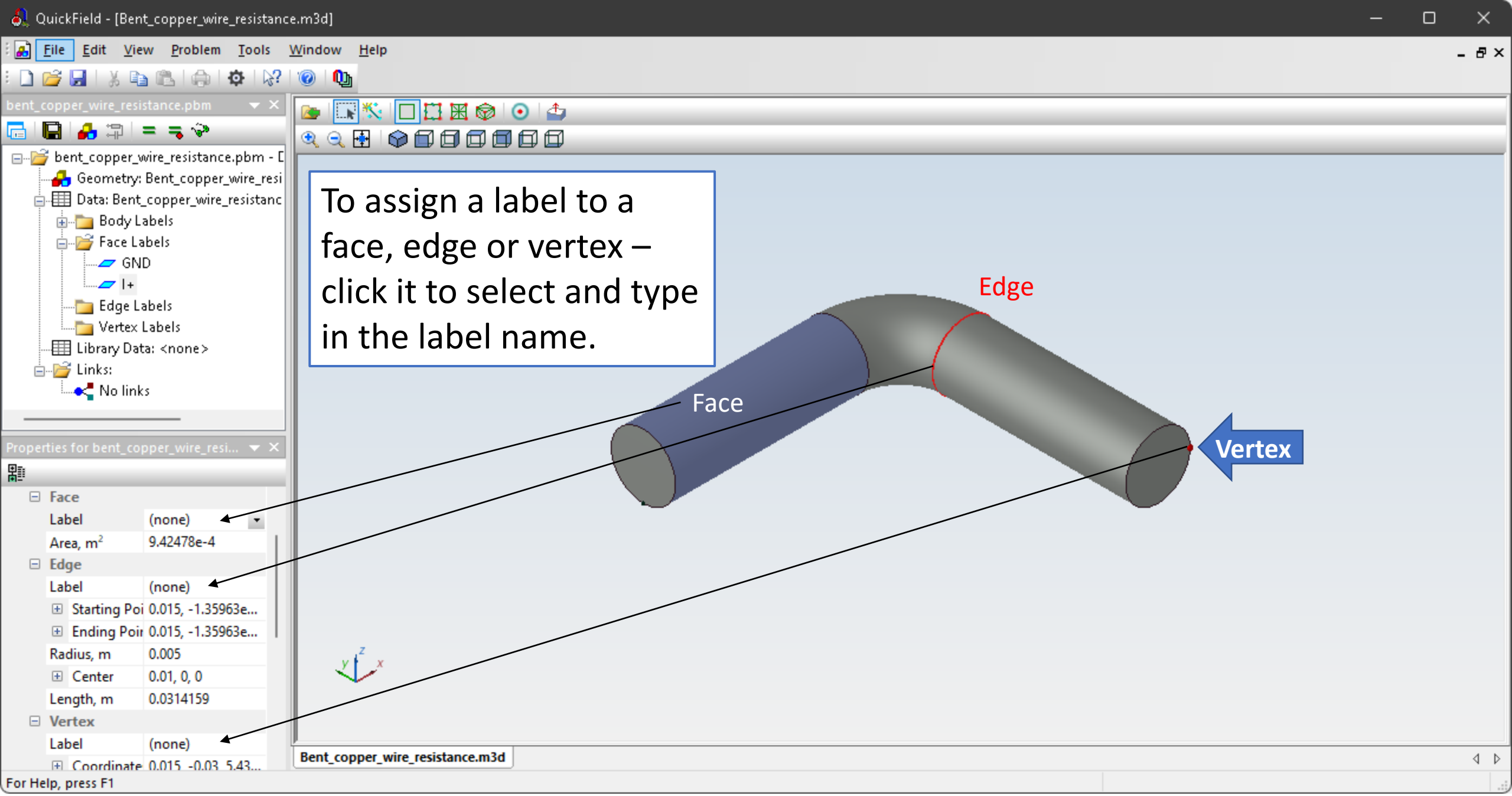

QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
Zoom to Fit (Ctrl+0)
Scale the window to fit the full extent
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - [
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Library Data: <none>
Links:
No links
Use Zoom buttons or use the mouse wheel to adjust the view.
Properties for bent_copper_wire_resi...
Background Region
Enabled No
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh 81
Bent_copper_wire_resistance.m3d
Scale the window to fit the full extent


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - [
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Library Data: <none>
Links:
No links
Properties for bent_copper_wire_resi...
Background Region
Enabled Yes
Padding, % 50
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh 165
Background region
Imported 3D model
Enable background region and specify padding to add space to the model
Bent_copper_wire_resistance.m3d
For Help, press F1


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
Cut by Plane
Make a cross-section of the 3D model by a plane
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - D
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Body Labe
coppe
Face Labe
Edge Labe
Vertex Lab
Library Data:
Links:
No links
You can use Cut by Plane to look at what is hidden inside bodies.
Properties for bent_copper_wire_resi...
Background Region
Enabled Yes
Padding, % 50
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh 165
Bent_copper_wire_resistance.m3d
Make a cross-section of the 3D model by a plane


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - [
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Library Data: <none>
Links:
No links
Properties for bent_copper_wire_resi...
Background Region
Enabled Yes
Padding, % 50
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh 165
Select All Bodies Ctrl+A
Unselect All Ctrl+D
Rotate and Pan
Insert Vertices
Cut by Plane
Hide Cutting Plane
Hide
Hide All but This
Unhide
Hide All
Unhide All
Transparent
Opaque
Copy Picture Ctrl+C; Ctrl+Insert
Properties Alt+Enter
In the context menu (right click) you can hide a body or make it transparent/opaque.
Bent_copper_wire_resistance.m3d
For Help, press F1


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - D
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Body Labels
Face Labels
GND
I+
Edge Labels
Vertex Labels
Library Data: <none>
Links:
No links
Properties for bent_copper_wire_resi...
Selection
Spacing Automatic
Spacing Value, m 0.0025
Face
Label I+
Area, m2 7.85398e-5
Background Region
Enabled Yes
Padding, % 50
Statistics
Bodies
Faces
Edges
Face Label Properties - I+
General
Voltage: U = Uo
Uo = 0 (V)
Normal Current Density: jn = j (Ajn = j)
j = 100/78.54e-6 (A/m2)
Floating Conductor (Equal Voltage)
OK
Cancel
Help
Labels are used to identify objects and for specifying their physical properties using Data Editor.
Bent_copper_wire_resistance.m3d
For Help, press F1
-0.04349 m, 0.02860 m, 0.00011 m


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - D
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Body Labels
Face Labels
GND
I+
Edge Labels
Vertex Labels
Library Data: <none>
Links:
No links
Properties for bent_copper_wire_resi...
Face
Label (none)
Area, m² 9.42478e-4
Edge
Label (none)
Starting Poi 0.015, -1.35963e...
Ending Poir 0.015, -1.35963e...
Radius, m 0.005
Center 0.01, 0, 0
Length, m 0.0314159
Vertex
Label (none)
Coordinate 0.015, -0.03, 5.43...
To assign a label to a face, edge or vertex – click it to select and type in the label name.
Edge
Face
Vertex
Bent_copper_wire_resistance.m3d
For Help, press F1

QuickField - [Bent_copper_wire_resistance.m3d]

File Edit View Problem Tools Window Help

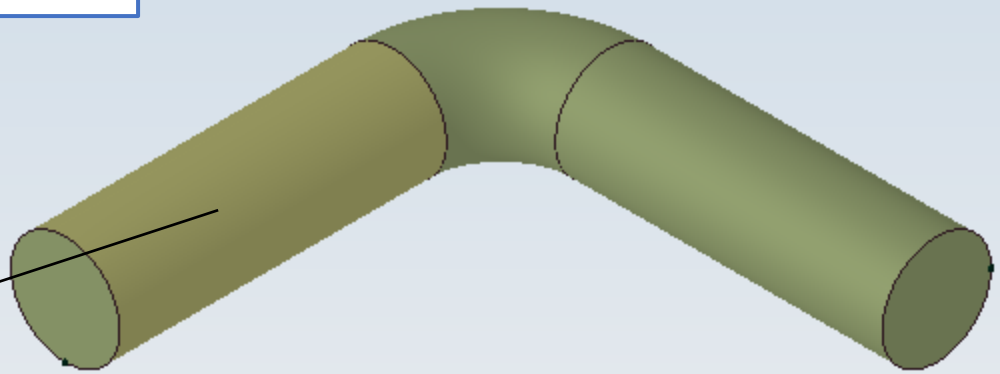
bent_copper_wire_resistance.pbm

- bent_copper_wire_resistance.pbm - [
  - Geometry: Bent_copper_wire_resi
  - Data: Bent_copper_wire_resistanc
    - Body Labels
      - copper
    - Face Labels
    - Edge Labels
    - Vertex Labels
  - Library Data: <none>
  - Links:
    - No links

Properties for bent_copper_wire_resi...

| | |
|---|---|
| **Selection** | |
| Spacing | Automatic |
| Spacing Value, m | 0.0025 |
| **Body** | |
| Label | copper |
| Volume, $m^3$ | 5.94609e-6 |
| **Background Region** | |
| Enabled | Yes |
| Padding, % | 50 |
| **Statistics** | |
| Bodies | |
| Faces | |
| Edges | |

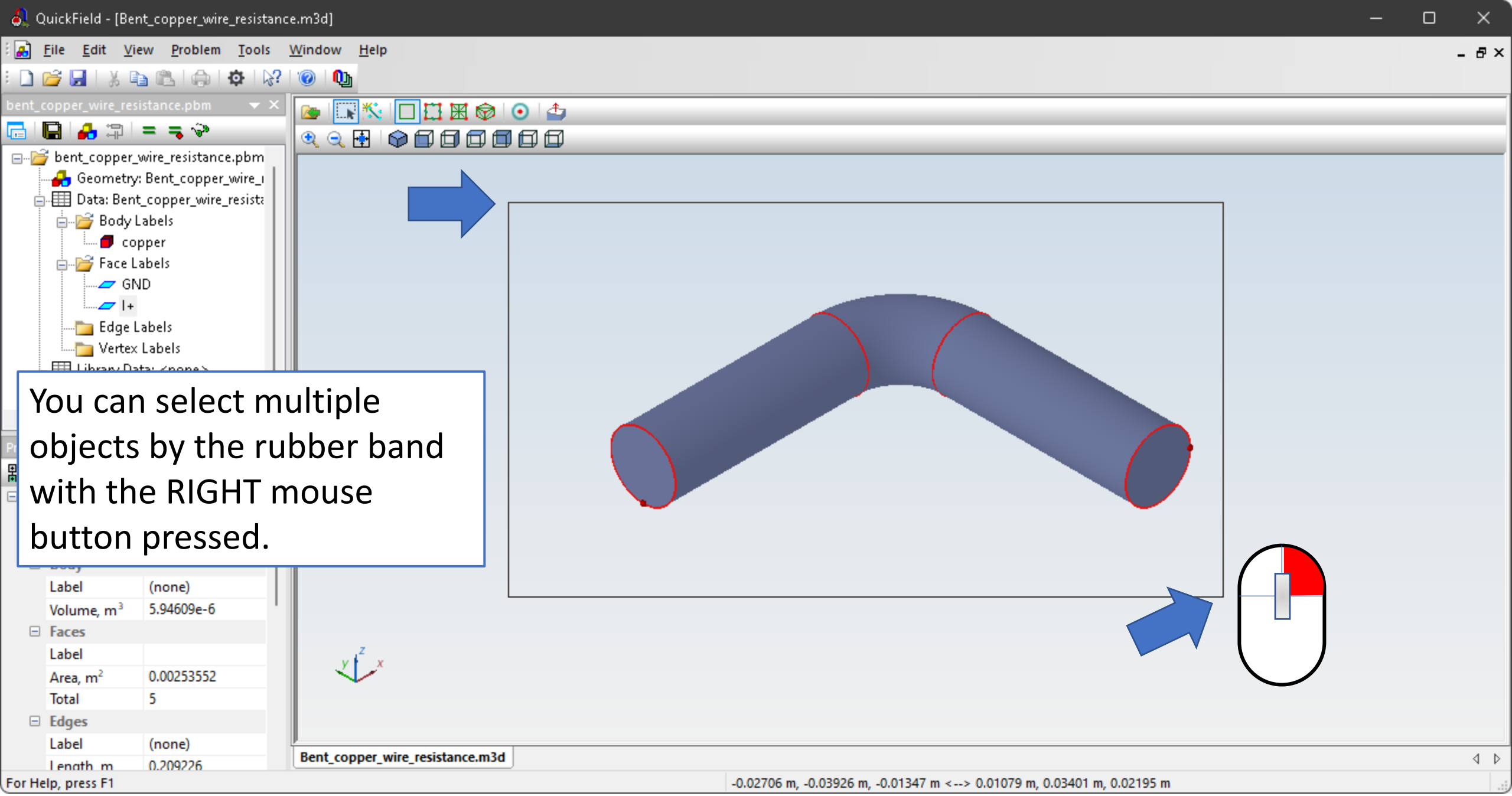
To select a body – click a selected face.



Bent_copper_wire_resistance.m3d

For Help, press F1

-0.01584 m, 0.00869 m, 0.00482 m


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm
Geometry: Bent_copper_wire_
Data: Bent_copper_wire_resist
Body Labels
copper
Face Labels
GND
I+
Edge Labels
Vertex Labels
You can select multiple objects by the rubber band with the RIGHT mouse button pressed.
Label (none)
Volume, m3 5.94609e-6
Faces
Label
Area, m2 0.00253552
Total 5
Edges
Label (none)
Length, m 0.209226
Bent_copper_wire_resistance.m3d
For Help, press F1
-0.02706 m, -0.03926 m, -0.01347 m <--> 0.01079 m, 0.03401 m, 0.02195 m

QuickField - [Bent_copper_wire_resistance.m3d]

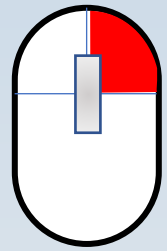
File Edit View Problem Tools Window Help

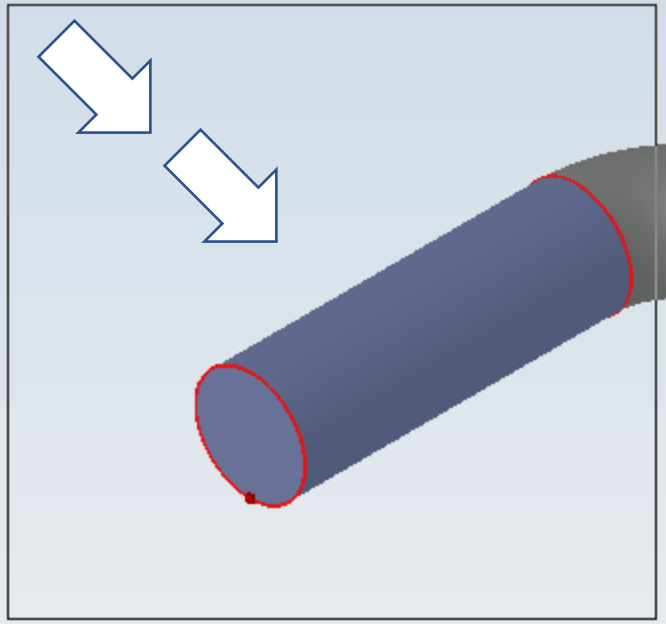
bent_copper_wire_resistance.pbm

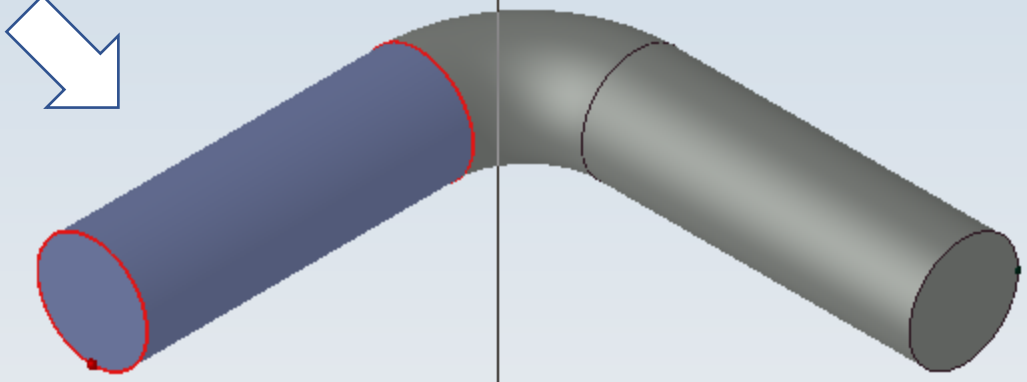
- bent_copper_wire_resistance.pbm
  - Geometry: Bent_copper_wire_
  - Data: Bent_copper_wire_resist
    - Body Labels
      - copper
    - Face Labels
      - GND
      - I+
    - Edge Labels
    - Vertex Labels
  - Library Data: <none>
  - Links:

Properties for bent_copper_wire_resi...

| Selection | |
|---|---|
| Spacing | Mixed |
| Spacing Value, m | |
| **Faces** | |
| Label | |
| Area, $m^2$ | 0.00102102 |
| Total | 2 |
| **Edges** | |
| Label | (none) |
| Length, m | 0.0928319 |
| Total | 4 |
| **Vertices** | |
| Label | (none) |







Body is
NOT selected

Drag direction matters. *Left-to-right* drag selects objects which are fully within the rubber rectangle.

Bent_copper_wire_resistance.m3d

For Help, press F1

-0.02804 m, -0.01180 m, -0.01146 m <--> -0.01465 m, 0.03432 m, 0.02102 m

QuickField - [Bent_copper_wire_resistance.m3d]

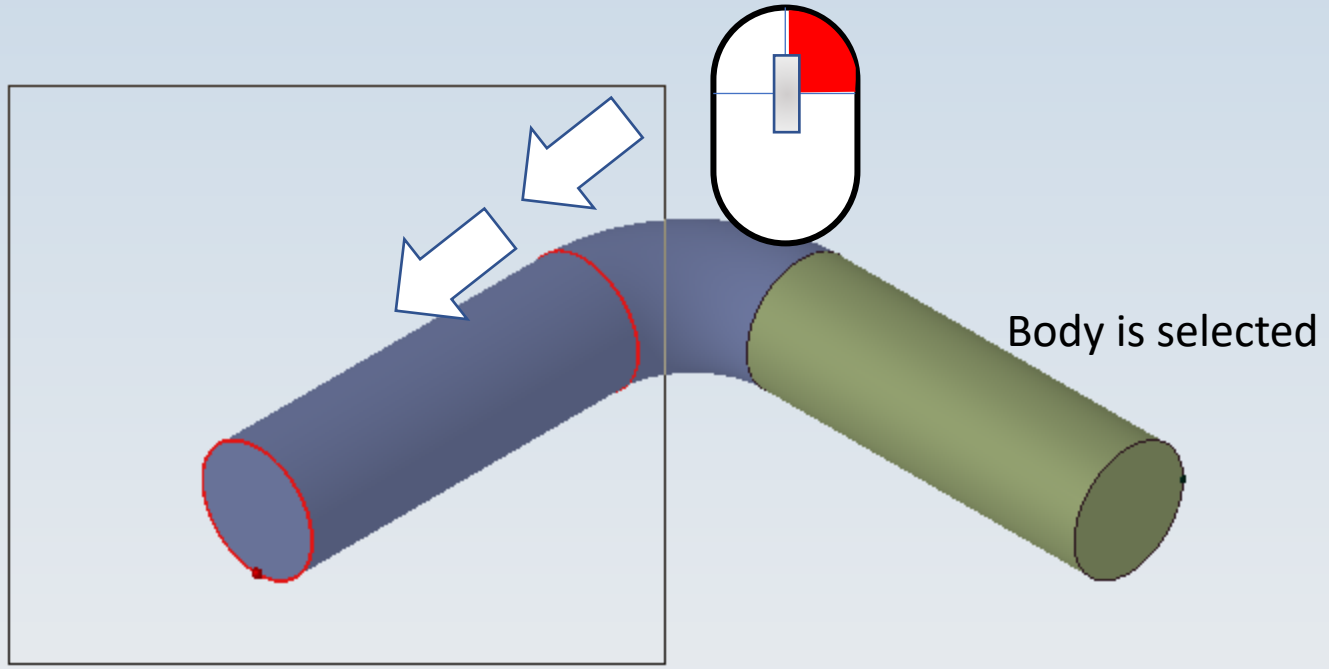
File Edit View Problem Tools Window Help

bent_copper_wire_resistance.pbm

- bent_copper_wire_resistance.pbm
  - Geometry: Bent_copper_wire_
  - Data: Bent_copper_wire_resist
    - Body Labels
      - copper
    - Face Labels
      - GND
      - I+
    - Edge Labels
    - Vertex Labels
  - Library Data: <none>
  - Links:

Properties for bent_copper_wire_resi...

| Selection | |
|---|---|
| Spacing | Mixed |
| Spacing Value, m | |
| **Body** | |
| Label | (none) |
| Volume, $m^3$ | 5.94609e-6 |
| **Faces** | |
| Label | |
| Area, $m^2$ | 0.0015145 |
| Total | 3 |
| **Edges** | |
| Label | (none) |
| Length, m | 0.116394 |

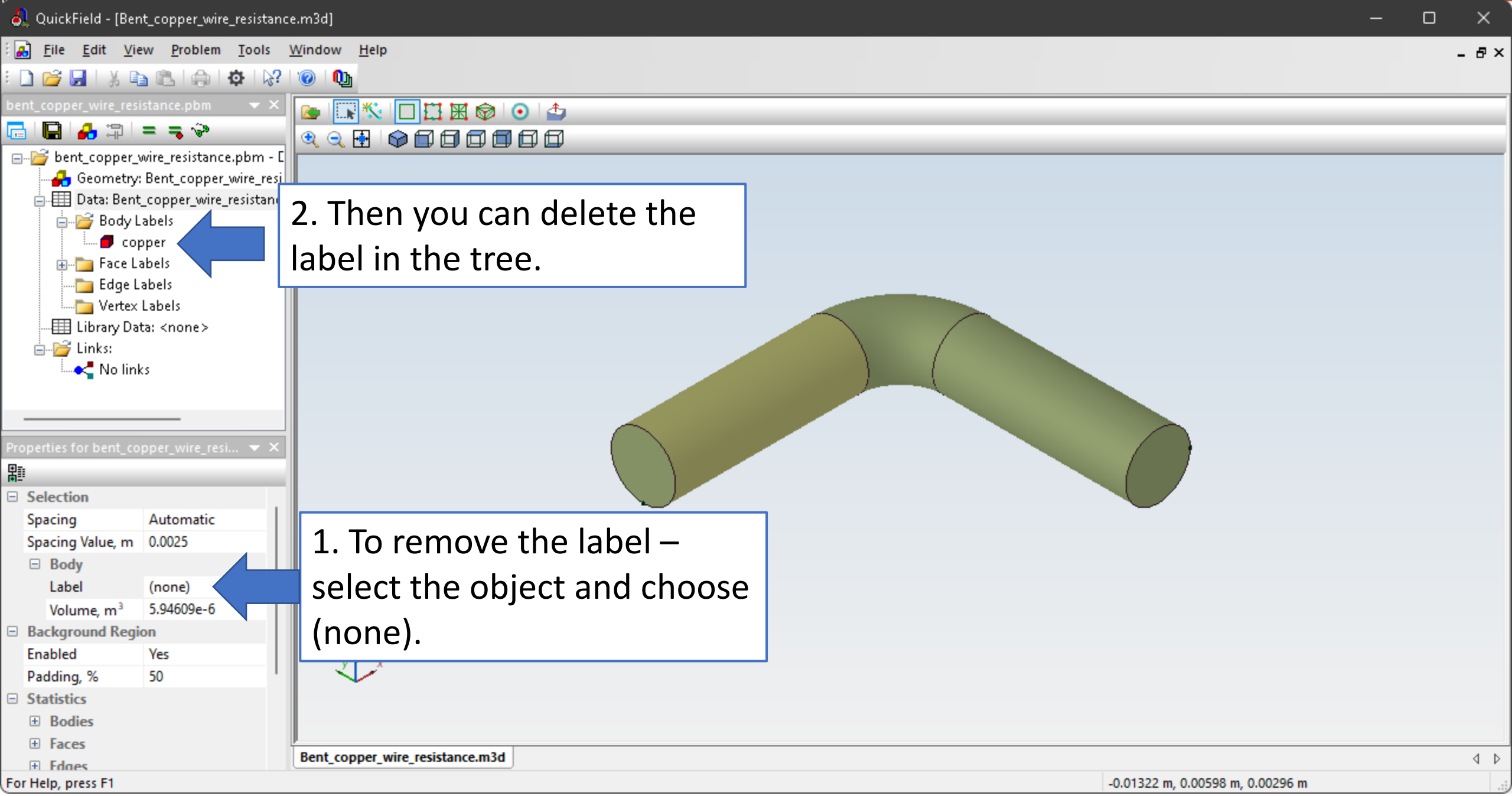


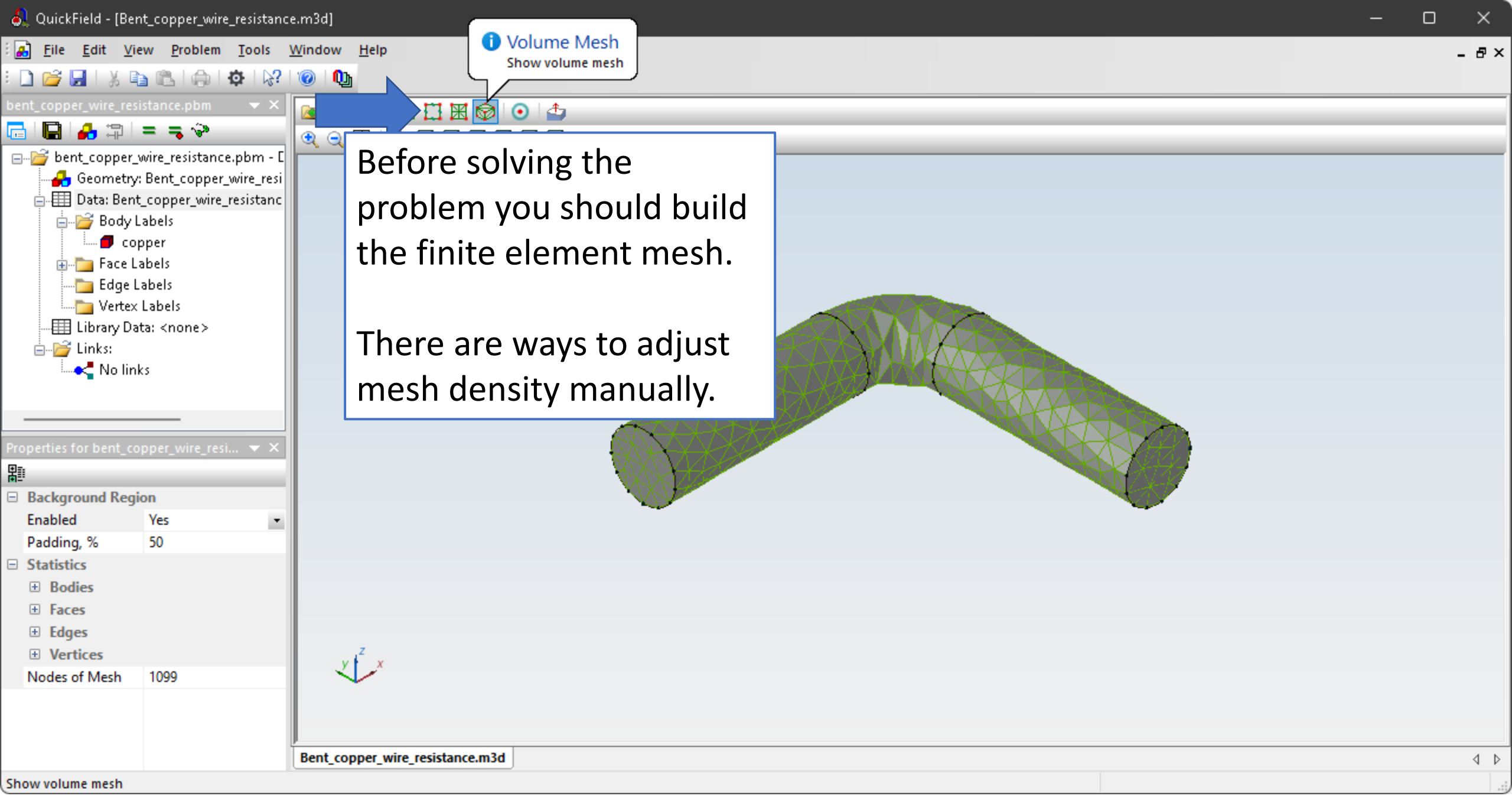

Drag direction matters. *Right-to-left* drag selects objects which are within or crossed by the rubber rectangle.

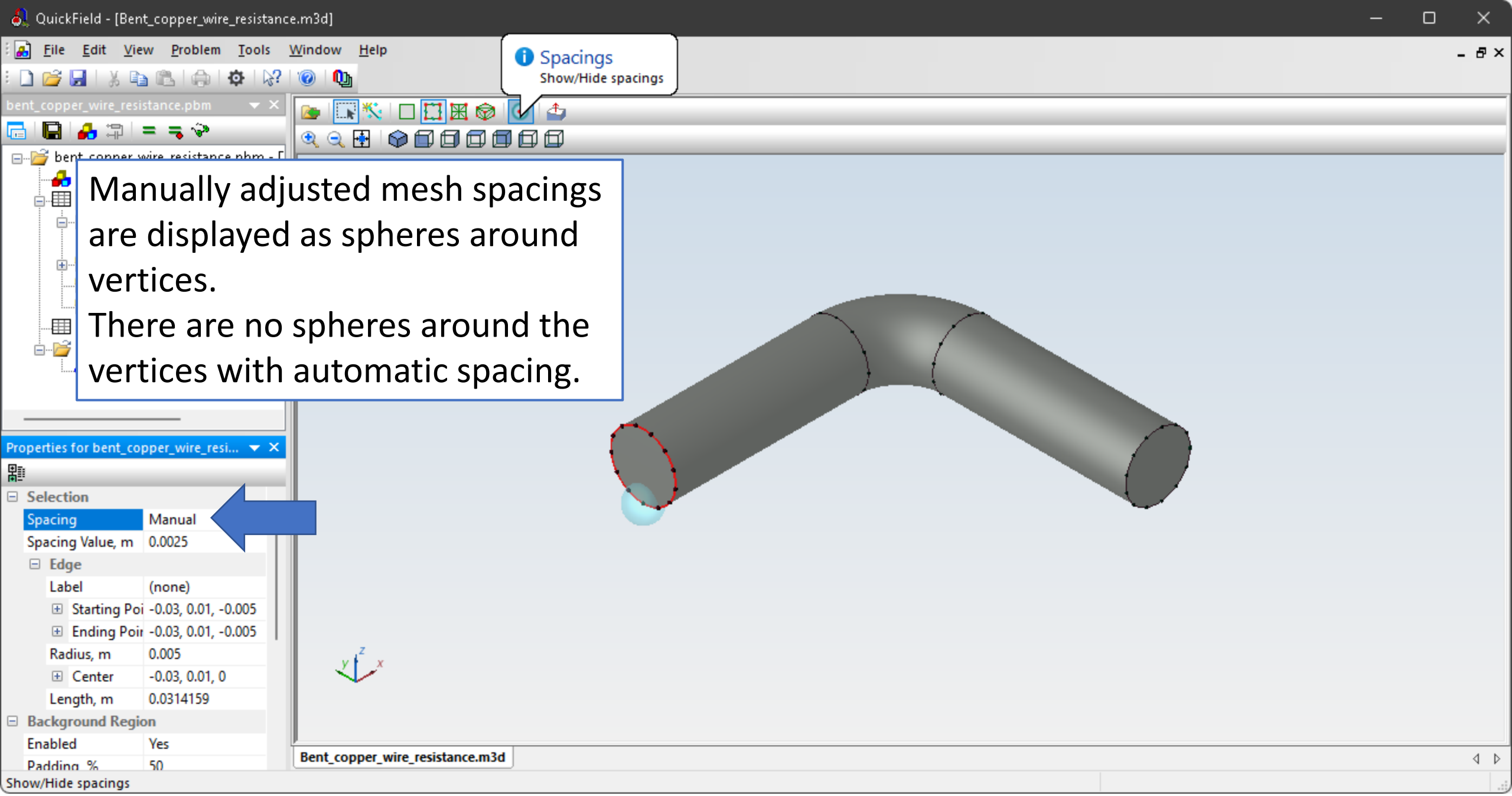
Bent_copper_wire_resistance.m3d

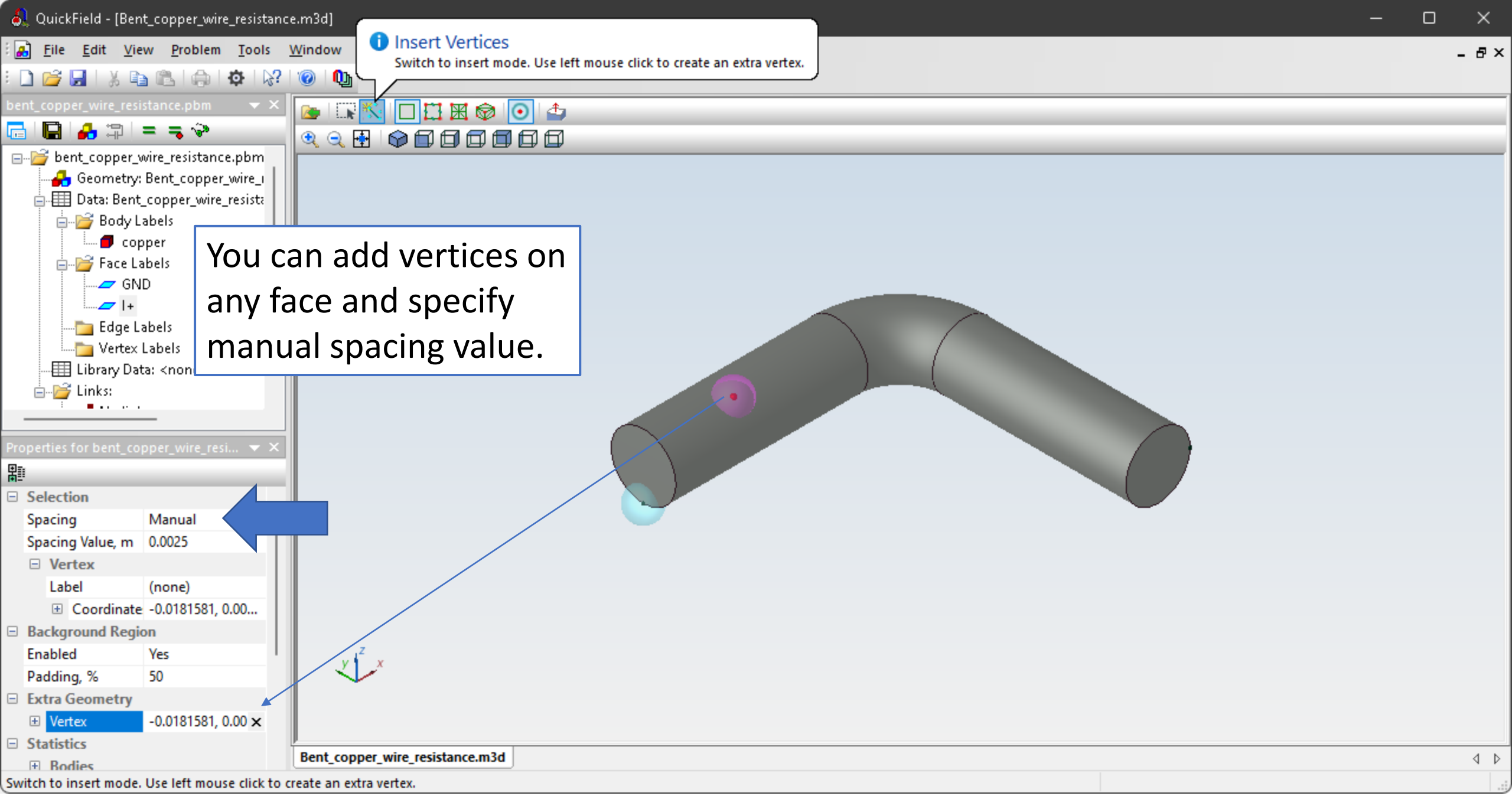
For Help, press F1

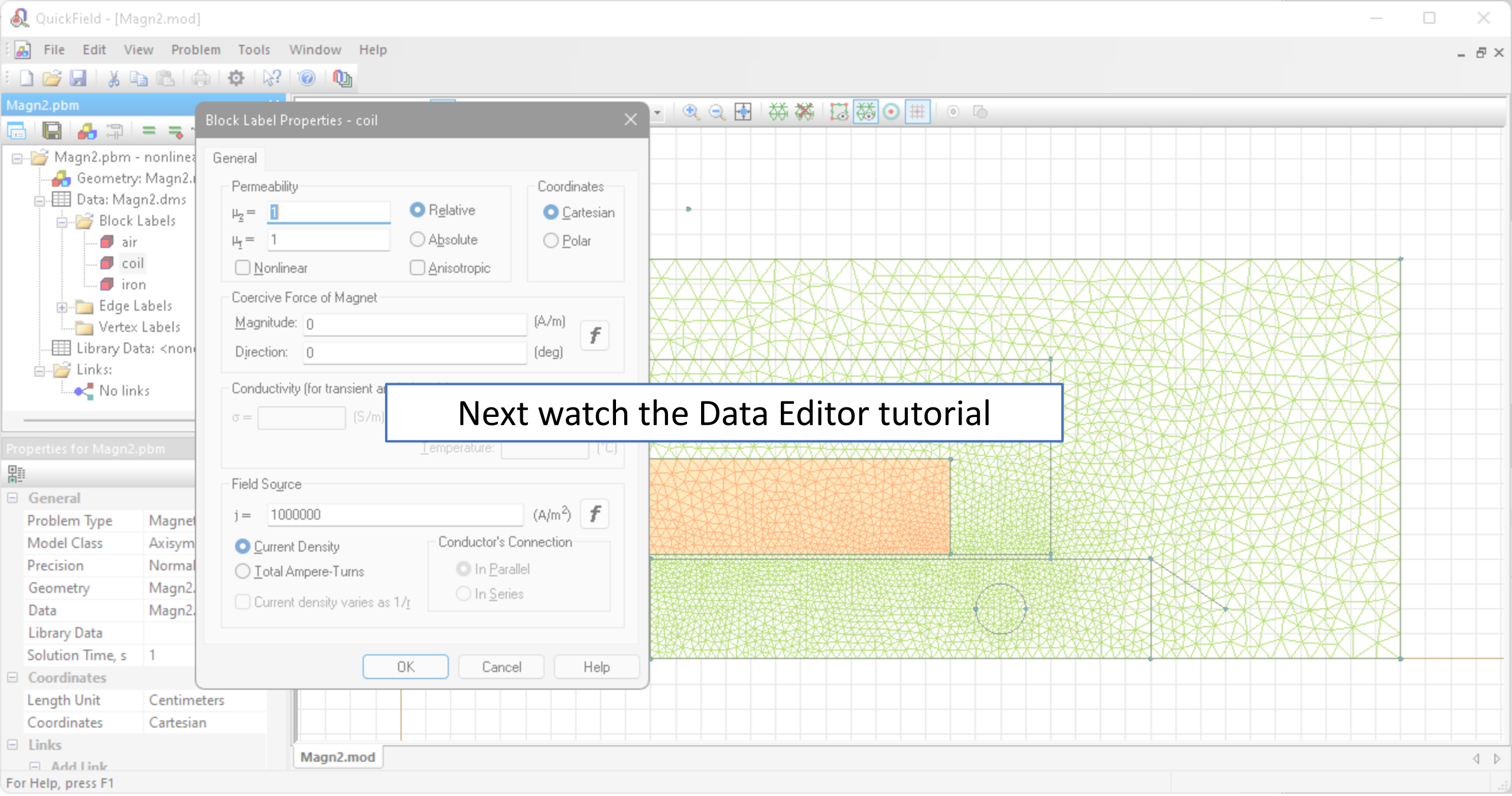
-0.04380 m, 0.00423 m, -0.00995 m <--> 0.00156 m, 0.01911 m, 0.02078 m


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - D
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistan
Body Labels
copper
Face Labels
Edge Labels
Vertex Labels
Library Data: <none>
Links:
No links
2. Then you can delete the label in the tree.
Properties for bent_copper_wire_resi...
Selection
Spacing
Automatic
Spacing Value, m
0.0025
Body
Label
(none)
Volume, m3
5.94609e-6
Background Region
Enabled
Yes
Padding, %
50
Statistics
Bodies
Faces
Edges
1. To remove the label – select the object and choose (none).
Bent_copper_wire_resistance.m3d
For Help, press F1
-0.01322 m, 0.00598 m, 0.00296 m


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
Volume Mesh
Show volume mesh
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm - D
Geometry: Bent_copper_wire_resi
Data: Bent_copper_wire_resistanc
Body Labels
copper
Face Labels
Edge Labels
Vertex Labels
Library Data: <none>
Links:
No links
Properties for bent_copper_wire_resi...
Background Region
Enabled Yes
Padding, % 50
Statistics
Bodies
Faces
Edges
Vertices
Nodes of Mesh 1099
Before solving the problem you should build the finite element mesh.
There are ways to adjust mesh density manually.
Bent_copper_wire_resistance.m3d
Show volume mesh


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window Help
Spacings
Show/Hide spacings
bent_copper_wire_resistance.pbm
Manually adjusted mesh spacings are displayed as spheres around vertices.
There are no spheres around the vertices with automatic spacing.
Properties for bent_copper_wire_resi...
Selection
Spacing Manual
Spacing Value, m 0.0025
Edge
Label (none)
Starting Poi -0.03, 0.01, -0.005
Ending Poir -0.03, 0.01, -0.005
Radius, m 0.005
Center -0.03, 0.01, 0
Length, m 0.0314159
Background Region
Enabled Yes
Padding, % 50
Bent_copper_wire_resistance.m3d
Show/Hide spacings


QuickField - [Bent_copper_wire_resistance.m3d]
File Edit View Problem Tools Window
Insert Vertices
Switch to insert mode. Use left mouse click to create an extra vertex.
bent_copper_wire_resistance.pbm
bent_copper_wire_resistance.pbm
Geometry: Bent_copper_wire_
Data: Bent_copper_wire_resist
Body Labels
copper
Face Labels
GND
I+
Edge Labels
Vertex Labels
Library Data: <non
Links:
You can add vertices on any face and specify manual spacing value.
Properties for bent_copper_wire_resi...
Selection
Spacing Manual
Spacing Value, m 0.0025
Vertex
Label (none)
Coordinate -0.0181581, 0.00...
Background Region
Enabled Yes
Padding, % 50
Extra Geometry
Vertex -0.0181581, 0.00
Statistics
Bodies
Bent_copper_wire_resistance.m3d
Switch to insert mode. Use left mouse click to create an extra vertex.


QuickField - [Magn2.mod]
File Edit View Problem Tools Window Help
Magn2.pbm
Magn2.pbm - nonlinea
Geometry: Magn2.
Data: Magn2.dms
Block Labels
air
coil
iron
Edge Labels
Vertex Labels
Library Data: <none
Links:
No links
Properties for Magn2.pbm
General
Problem Type Magnet
Model Class Axisym
Precision Normal
Geometry Magn2
Data Magn2
Library Data
Solution Time, s 1
Coordinates
Length Unit Centimeters
Coordinates Cartesian
Links
Add Link
Block Label Properties - coil
General
Permeability
μ2 = 1
μ1 = 1
Relative
Absolute
Nonlinear
Anisotropic
Coordinates
Cartesian
Polar
Coercive Force of Magnet
Magnitude: 0 (A/m)
Direction: 0 (deg)
Conductivity (for transient a
σ = (S/m)
Temperature: (°C)
Field Source
j = 1000000 (A/m2)
Current Density
Total Ampere-Turns
Current density varies as 1/r
Conductor's Connection
In Parallel
In Series
OK
Cancel
Help
Next watch the Data Editor tutorial
Magn2.mod
For Help, press F1