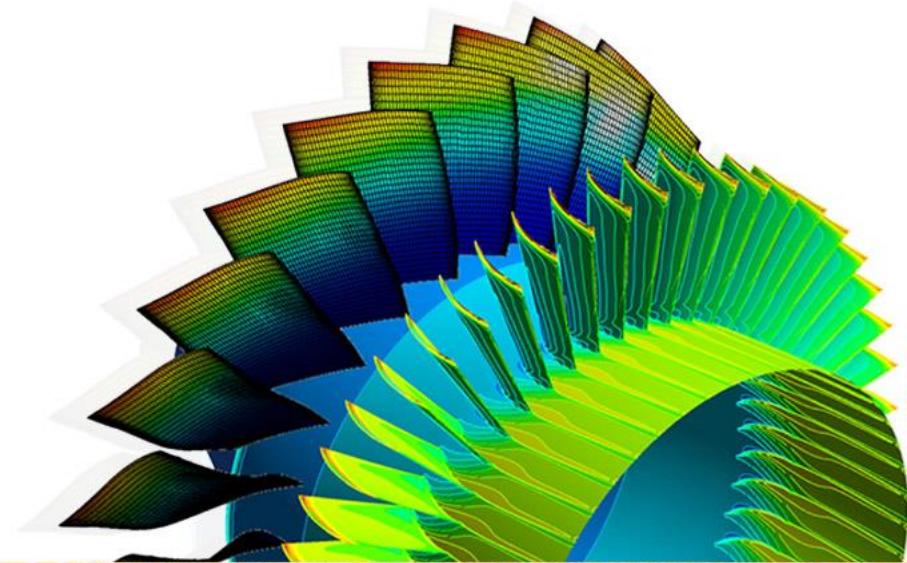




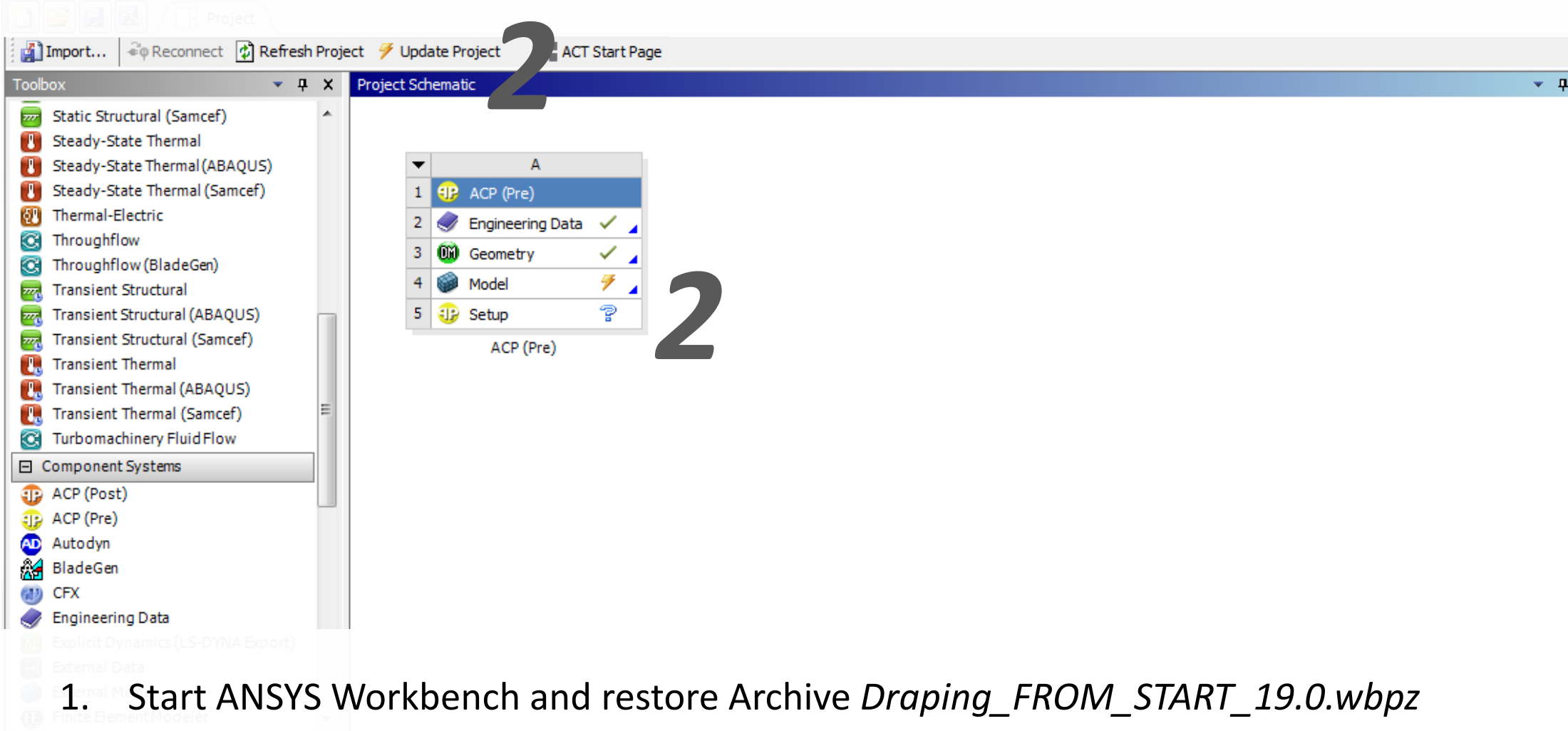
ANSYS Composite PrepPost 19.0

Workshop 06.1 – Draping



6. Workshop Draping

Start ANSYS Workbench and Restore Archive

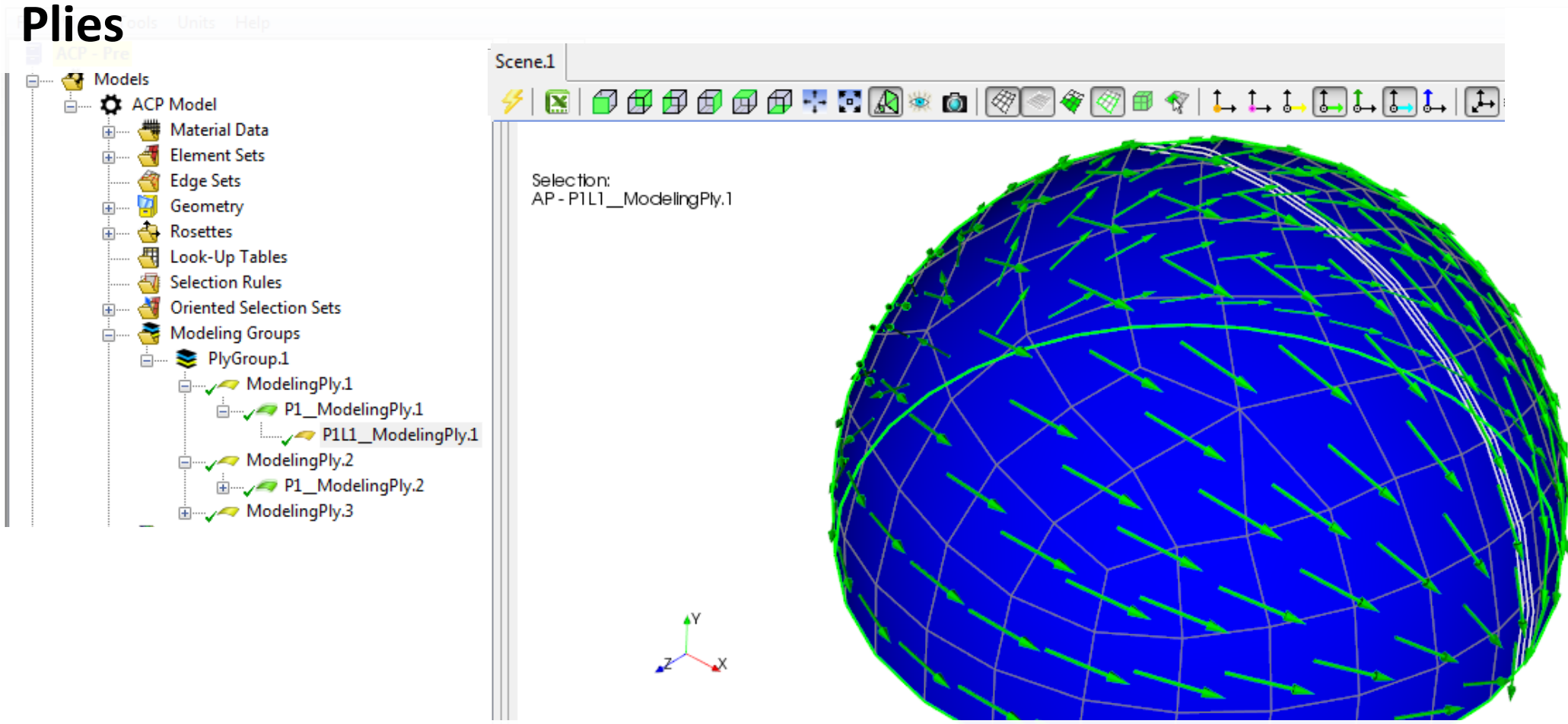


1. Start ANSYS Workbench and restore Archive *Draping_FROM_START_19.0.wbpz*
2. Update Project and Edit ACP Setup (Right mouse button on Setup → Edit)

6. Workshop Draping

ACP-Pre.acp - ANSYS Composite PrepPost

Plies

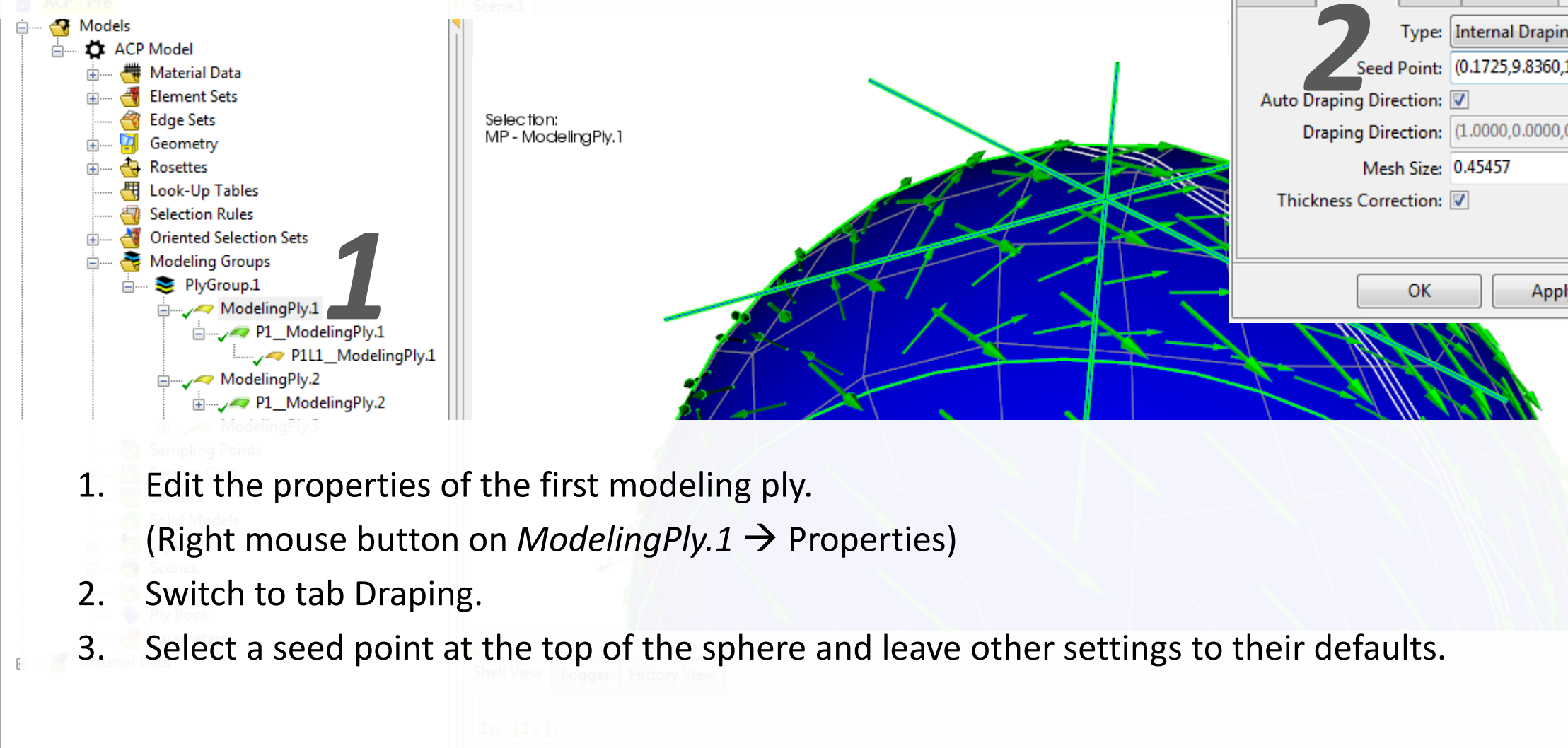


Three layer of a woven fabric have been defined

```
in [10]: db.models[u'ACP Model'].selection.set([db.models[u'ACP Model'].modeling groups['PlyGroup.1'].plies['ModelingPly.1'].production plies['ProductionPly.1']])
```

6. Workshop Draping

Calculate Draping



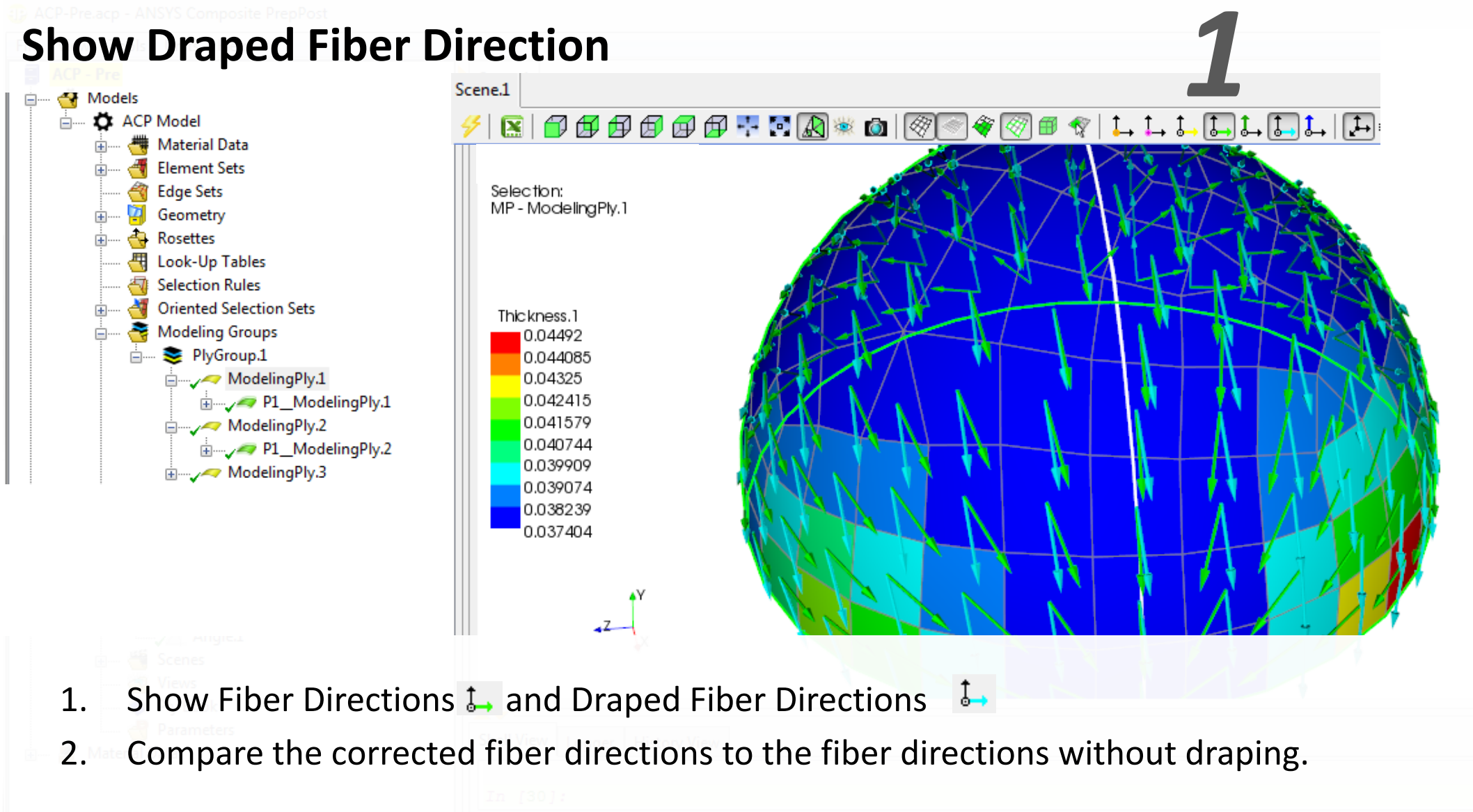
The screenshot displays the ANSYS Composite PrepPost interface. On the left, the 'Models' tree shows a hierarchy: ACP Model > Material Data > Element Sets > Edge Sets > Geometry > Rosettes > Look-Up Tables > Selection Rules > Oriented Selection Sets > Modeling Groups > PlyGroup.1 > ModelingPly.1. A large number '1' is placed next to 'ModelingPly.1'. The main view shows a 3D model of a sphere with green lines representing the draping of the first modeling ply. A large number '2' is placed over the 'Draping' tab in the 'Modeling Ply Properties' dialog box. A large number '3' is placed over the 'Seed Point' field in the same dialog box. The 'Modeling Ply Properties' dialog box is open, showing the 'Draping' tab. The 'Name' is 'ModelingPly.1' and the 'ID' is 'ModelingPly.1'. The 'Type' is 'Internal Draping'. The 'Seed Point' is '(0.1725,9.8360,1.2354)'. The 'Auto Draping Direction' is checked. The 'Draping Direction' is '(1.0000,0.0000,0.0000)'. The 'Mesh Size' is '0.45457'. The 'Thickness Correction' is checked. The 'OK', 'Apply', and 'Cancel' buttons are at the bottom.

1. Edit the properties of the first modeling ply.
(Right mouse button on *ModelingPly.1* → Properties)
2. Switch to tab Draping.
3. Select a seed point at the top of the sphere and leave other settings to their defaults.



6. Workshop Draping

Show Draped Fiber Direction

1



The screenshot displays the ANSYS ACP-Pre interface. On the left, the 'Models' tree shows the hierarchy: ACP Model > Material Data > Element Sets > Edge Sets > Geometry > Rosettes > Look-Up Tables > Selection Rules > Oriented Selection Sets > Modeling Groups > PlyGroup.1 > ModelingPly.1. The main view shows a 3D model of a dome with a grid of green arrows representing fiber directions. A color scale for 'Thickness.1' is visible, ranging from 0.037404 (blue) to 0.04492 (red). The 'Selection' is set to 'MP - ModelingPly.1'. The 'Scene.1' toolbar is at the top, and the 'In [30]' command is at the bottom.

1. Show Fiber Directions  and Draped Fiber Directions 
2. Compare the corrected fiber directions to the fiber directions without draping.

6. Workshop Draping

Calculate Draping based on the Oriented Selection Sets

Selection: MP - ModelingPly.1

1

2

3

Modeling Ply Properties

Name: ModelingPly.1

ID: ModelingPly.1

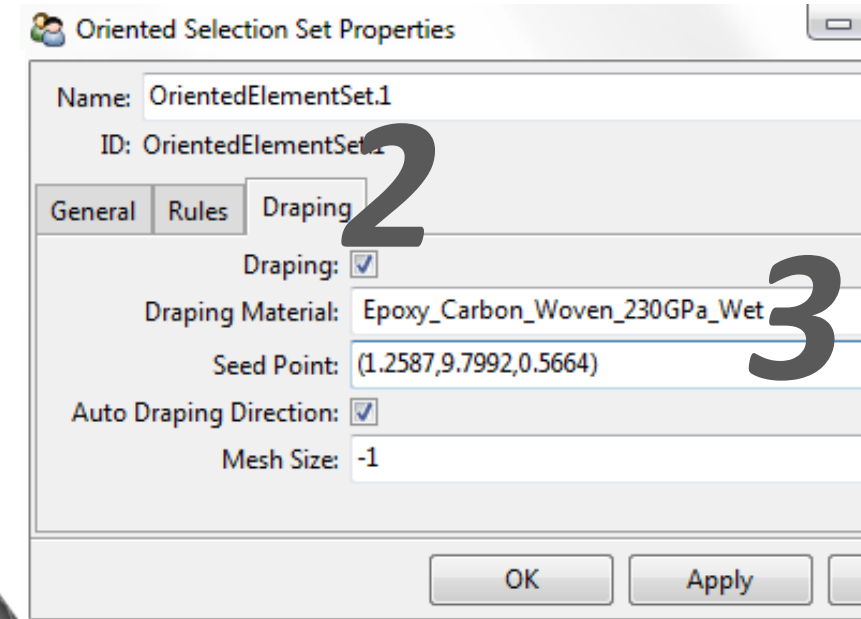
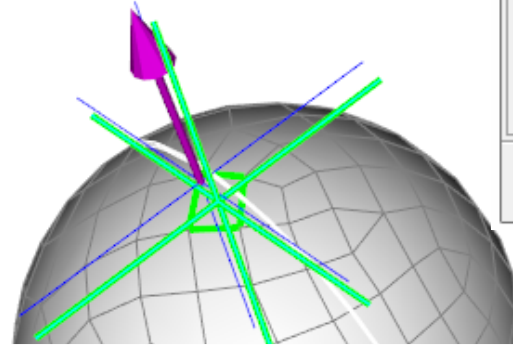
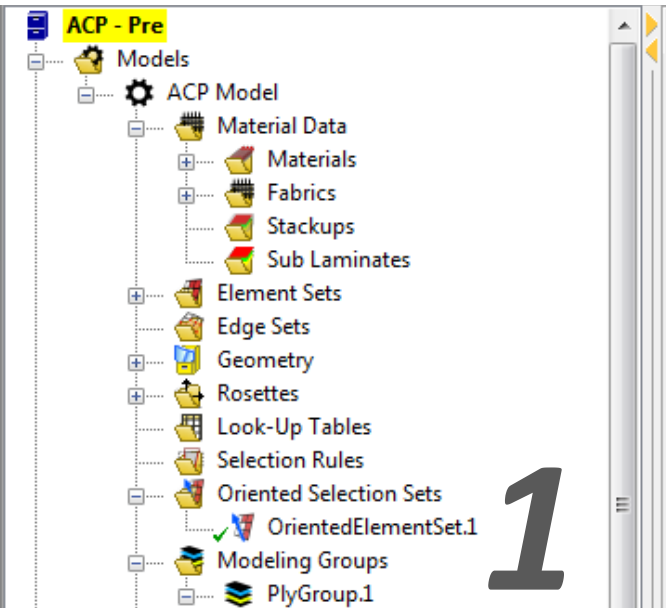
General Draping Rules Thickness

Type: No Draping

OK Apply Cancel

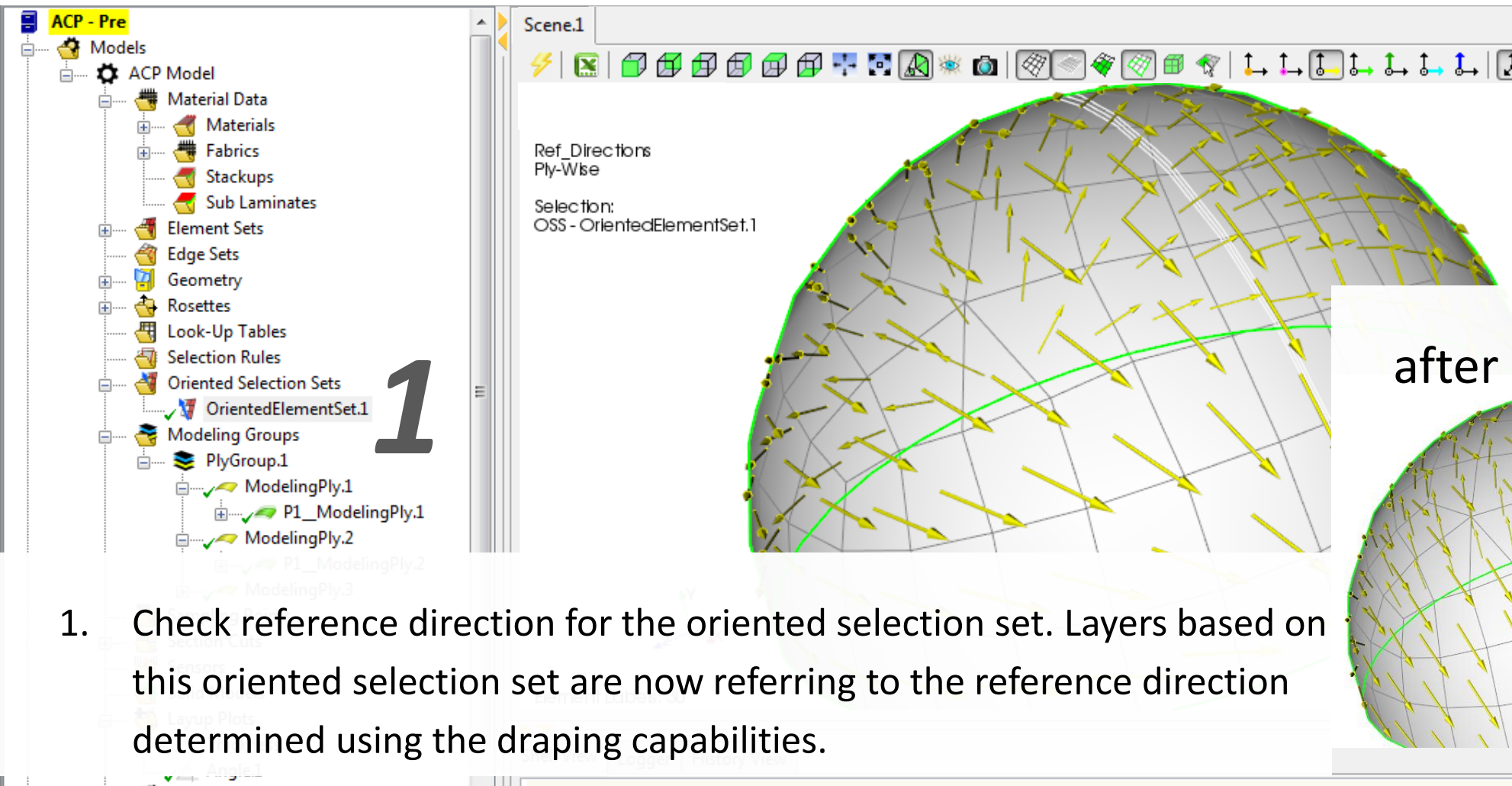
1. Edit the properties of the first modeling ply.
(Right mouse button on ModelingPly.1 → Properties)
2. Switch to tab Draping.
3. Turn off draping for this ply, Type: No Draping.

6. Workshop Draping



1. Edit the properties of the Oriented Selection Set.
(Right mouse button on *OrientedElementSet.1* → Properties)
2. Switch to tab Draping.
3. Select draping and a draping material. Define a seed point at the top of the sphere. Draping Direction and mesh size can be left to the default values.

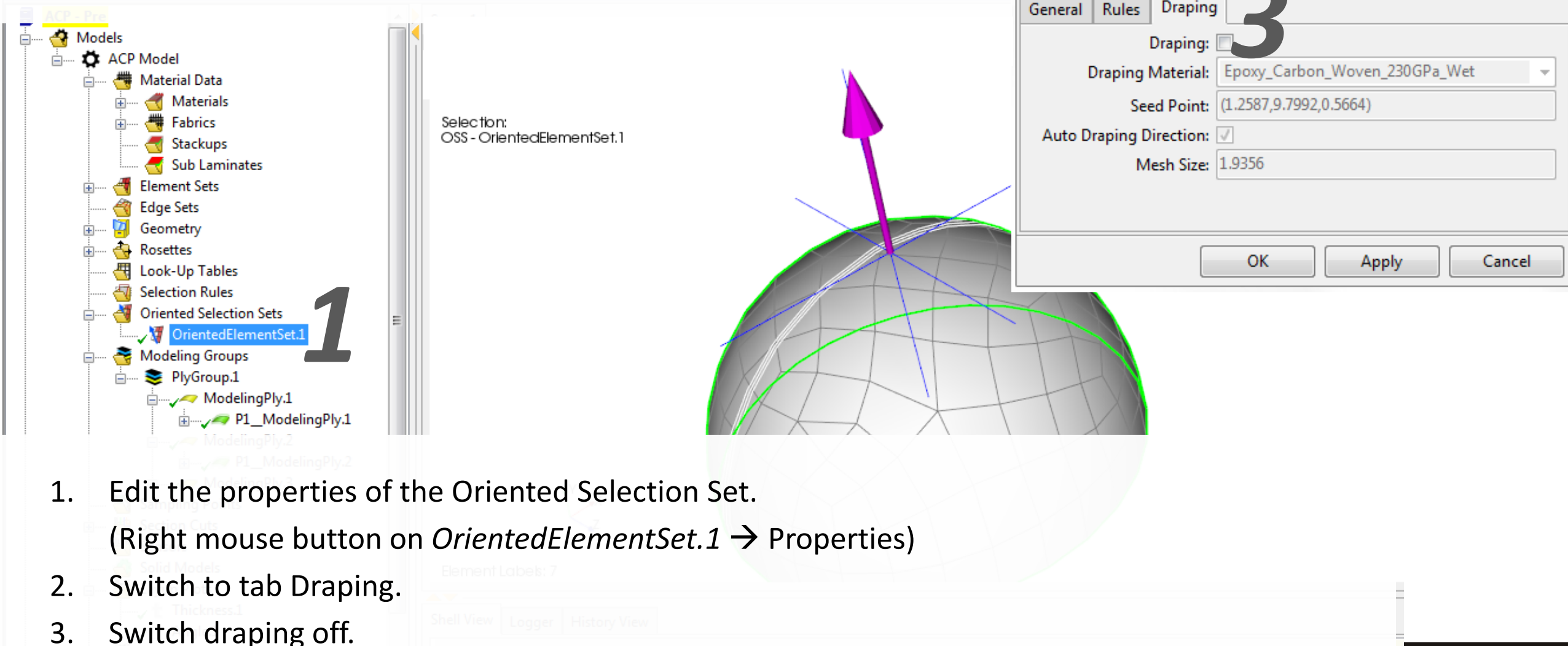
6. Workshop Draping



1. Check reference direction for the oriented selection set. Layers based on this oriented selection set are now referring to the reference direction determined using the draping capabilities.

6. Workshop Draping

The effect of the Seed Point



1. Edit the properties of the Oriented Selection Set.
(Right mouse button on *OrientedElementSet.1* → Properties)
2. Switch to tab Draping.
3. Switch draping off.

6. Workshop Draping

ACP-Pre.acp - ANSYS Composite PrepPost

Calculate Draping

The screenshot displays the ANSYS Composite PrepPost interface. On the left, the 'Models' tree shows the 'ACP Model' structure, including 'Material Data', 'Element Sets', 'Geometry', and 'Modeling Groups'. The 'Modeling Groups' list includes 'PlyGroup.1' and 'ModelingPly.1'. A large number '1' is placed next to 'ModelingPly.1'. In the center, a 3D sphere mesh is shown with a green 'X' marking a seed point. A large number '2' is placed next to the 'Draping' tab in the 'Modeling Ply Properties' dialog box. On the right, the 'Modeling Ply Properties' dialog box is open, showing the 'Draping' tab. The 'Type' is set to 'Internal Draping', the 'Seed Point' is '(-0.4997,1.0715,9.8188)', and the 'Thickness Correction' is checked. A large number '3' is placed next to the 'Seed Point' field.

1. Edit the properties of the first modeling ply.
2. Switch to tab Draping.
3. Select a new seed point as shown above.

6. Workshop Draping

ACP-Pre.acp - ANSYS Composite PrepPost

Show Draping Shear Angle

ACP - Pre

Models

- ACP Model
 - Material Data
 - Element Sets
 - Edge Sets
 - Geometry
 - Rosettes
 - Look-Up Tables
 - Selection Rules
 - Oriented Selection Sets
 - Modeling Groups
 - PlyGroup.1
 - ModelingPly.1
 - P1_ModelingPly.1
 - ModelingPly.2
 - ModelingPly.3
 - Field Definitions
 - Sampling Points
 - Section Cuts
 - Solid Models
 - Sensors
 - Layup Plots
 - DrapingMesh.1
 - Thickness.1
 - Angle.1

Scene.1

Draping
Ply-Wise

Selection:
PP - P1__ModelingPly.1

DrapingMesh.1

89.403
79.47
69.537
59.604
49.671
39.738
29.805
19.872
9.9393
0.0064516

Overlap

Draping

Name: DrapingMesh.1
ID: DrapingMesh.1

General Legend

Ply-Wise: ☒
Show Draping Mesh: ☒
Show Flatwrap: ☐

OK Apply Cancel

1. Right-click on Layup Plots in the tree and add Create Draping Mesh and Flatwrap (double click on DrapingMesh.1 and select Show Draping Mesh among the options)
2. Update and select the P1_ModelingPly.1 among the modeling plies to show the average shear (distortion)