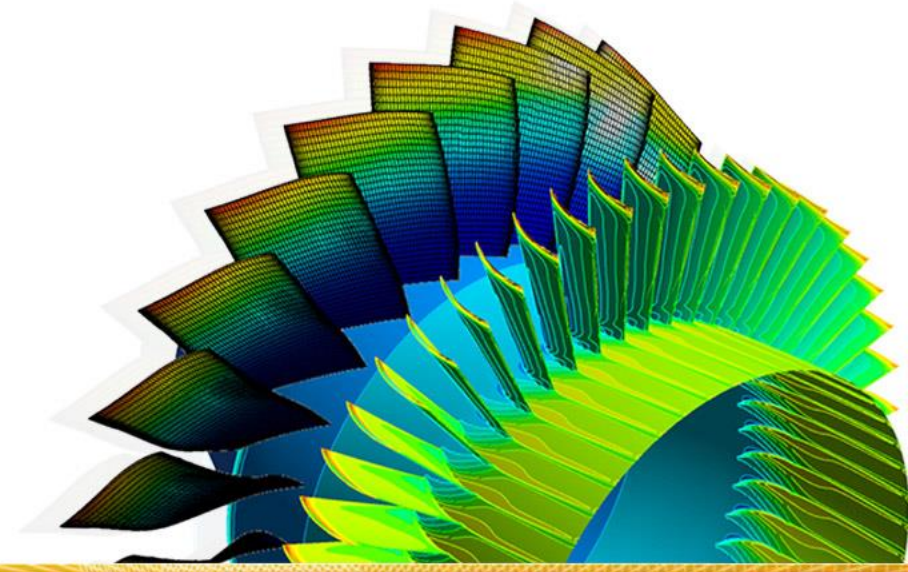
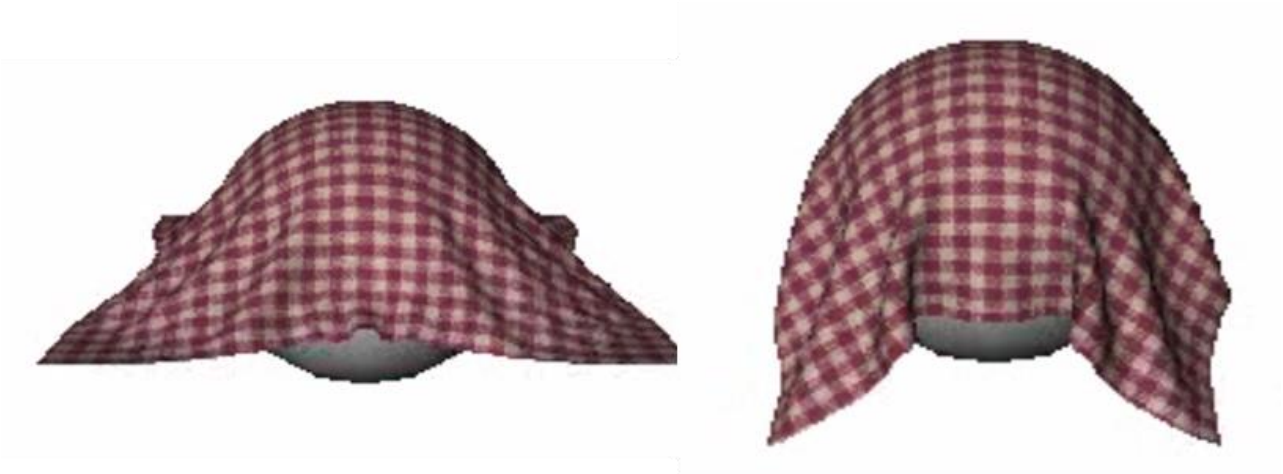
ANSYS Composite PrepPost 19.0

Module 6: Draping



6. Draping

- Draping is the process of placing layers onto a form.
- Wrinkling effects can occur for forms more complex than a plane surface.
- Distortion within the layer can change the fiber direction in the draping process.

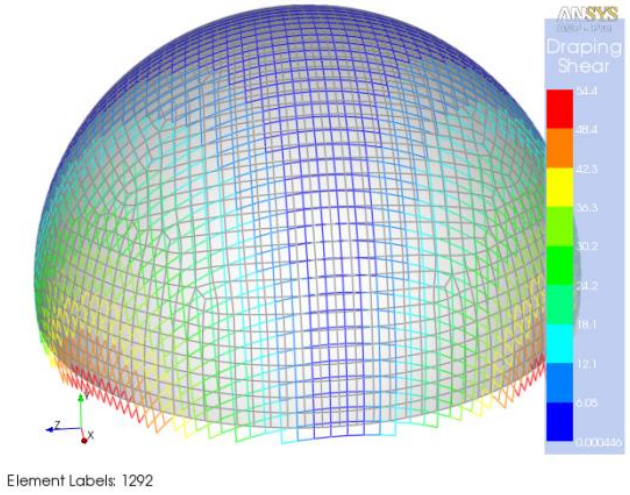


University College London
(http://www.cs.ucl.ac.uk/research/vr/Projects/3DCentre/staticres.htm)

6. Draping

- ANSYS Composite PrepPost can analyze draping to identify possible wrinkling effects in critical areas due to distortion and to correct the fiber directions.
- The draping capabilities of ANSYS Composite PrepPost are mainly used to correct the fiber directions for the simulation.

Distortion

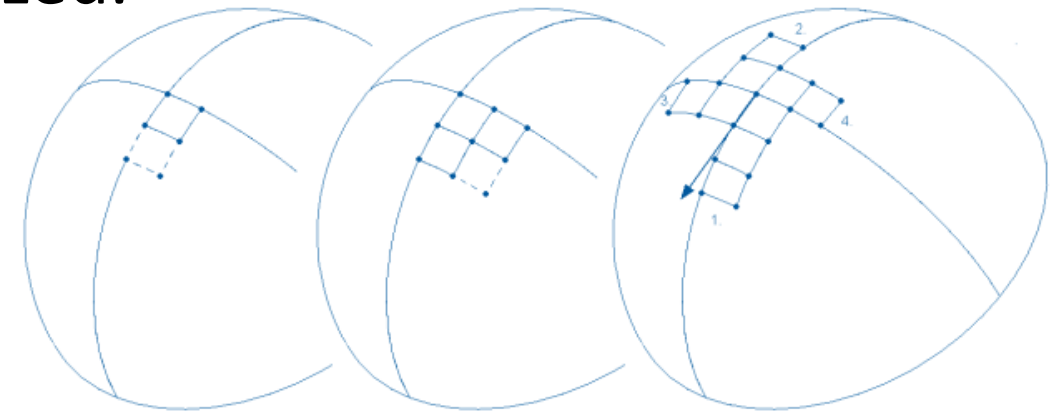


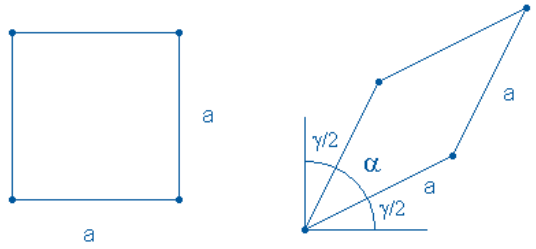
6. Draping

- Draping can be defined for ply groups or for oriented selection sets.
- When draping is defined for an oriented selection set the draped fiber directions are mapped on each layer defined based on this oriented selection set.
- When draping is defined the draped fiber direction will automatically be used for the simulation.
- If draping is calculated for both an oriented selection set and a ply group the draping results of the ply group overrule the draping results of the oriented selection set.

6. Draping

- The draping algorithm in ANSYS Composite PrepPost is based on a minimizing energy approach.
- A pin joint net model is placed on the mold and the shear strain energy for all elements of the net is minimized.



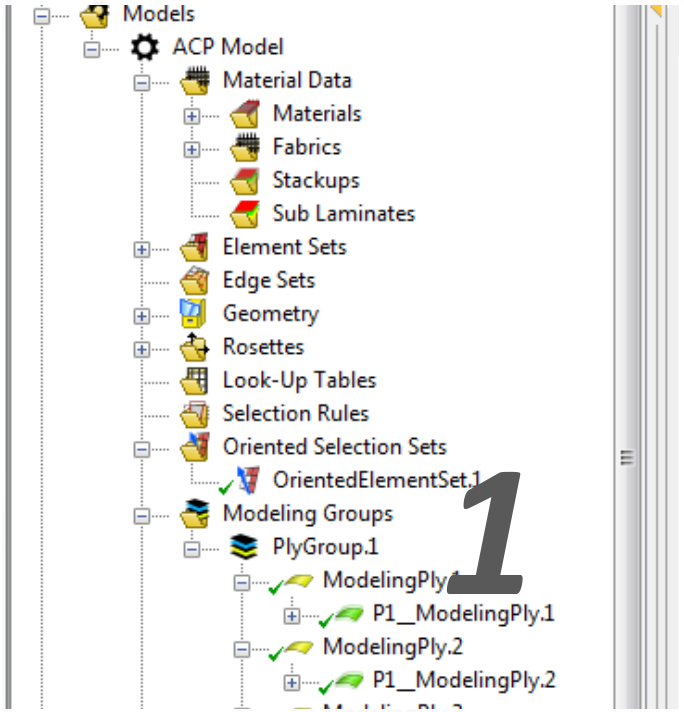


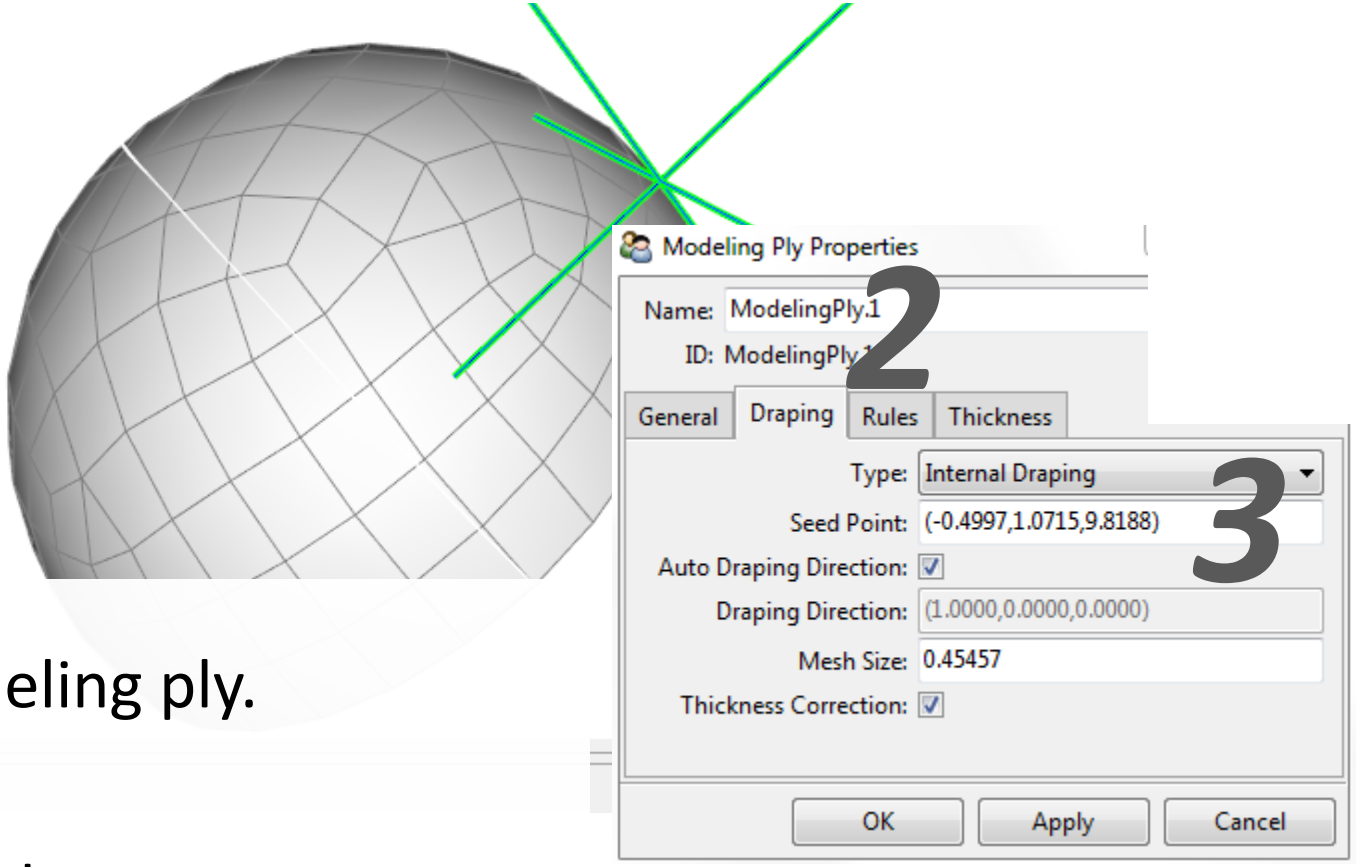
6. Draping

- The draping simulation starts from a given seed point and progresses in the defined draping direction.
- The pin joint net model is specifically developed for woven fabrics, but it has been proven to work for cross ply prepreg stacks and also for single unidirectional plies when deformations are moderate.
- ANSYS Composite PrepPost can import draping angles or directions from other sources using tables.

6. Draping

Calculate Draping



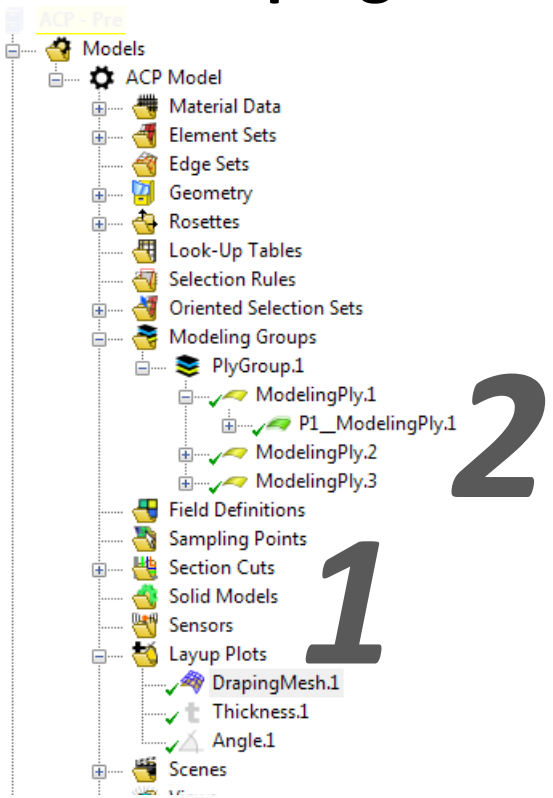


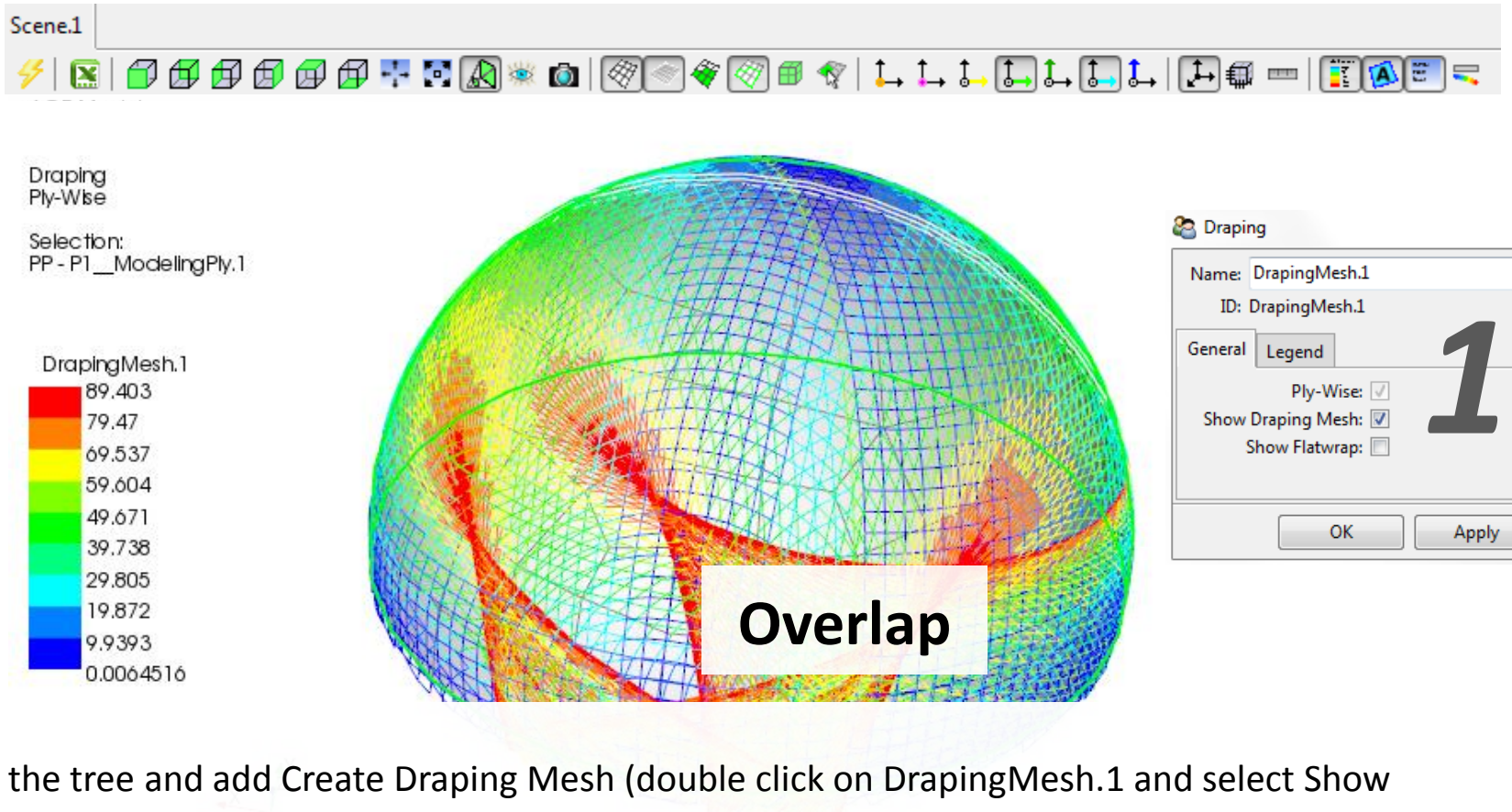
ties of the first modeling ply.

2. Switch to tab Draping.
3. Select a new seed point as shown above.

6. Draping

Show Draping Shear Angle





1. Right-click on Layup Plots in the tree and add Create Draping Mesh (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)