

ANSYS 12 - LaminatePlate - Problem Specification

 This Tutorial is Under Construction!

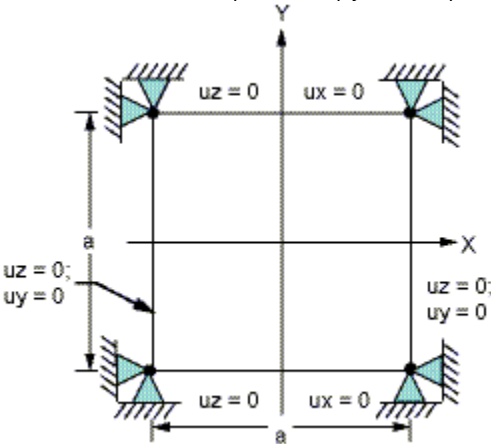
Author: John Singleton, Cornell University

Problem Specification

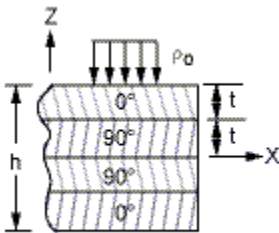
- 1. Pre-Analysis & Start-Up
- 2. Geometry
- 3. Mesh
- 4. Setup (Physics)
- 5. Solution
- 6. Results
- 7. Verification & Validation

Problem Specification

This tutorial guides the user to complete VM 82 from the Verification Manual for The Mechanical APDL Application using shell elements in ANSYS Workbench. Consider a square cross ply laminate plate that is supported at its edges and subjected to a uniform pressure as shown in the image below.



The laminate plate is made out of four layers as can be seen in the following illustration.



Note that the orientations are either 0 or 90 degrees.

The length of the sides of the square are 10 meters, the thickness of each layer is 0.025m and the total thickness of the plate is 0.1m. The layers are made up of an orthotropic material. The properties of the material are displayed in the table below.

Property	Value
Young's Modulus E_x	25x10 ⁶ N/m ²
Young's Modulus E_y	1x10 ⁶ N/m ²
Major Poisson's ratio V_xy	0.25
Shear Modulus G_xy	0.5x10 ⁶ N/m ²
Shear Modulus G_yz	0.2x10 ⁶ N/m ²

The uniform pressure on the plate has a magnitude of one Pascal. Find the resultant deflection of the center of the plate in the Z direction using ANSYS Workbench.

[Go to Step 1: Pre-Analysis & Start-Up](#)

[See and rate the complete Learning Module](#)

[Go to all ANSYS Learning Modules](#)