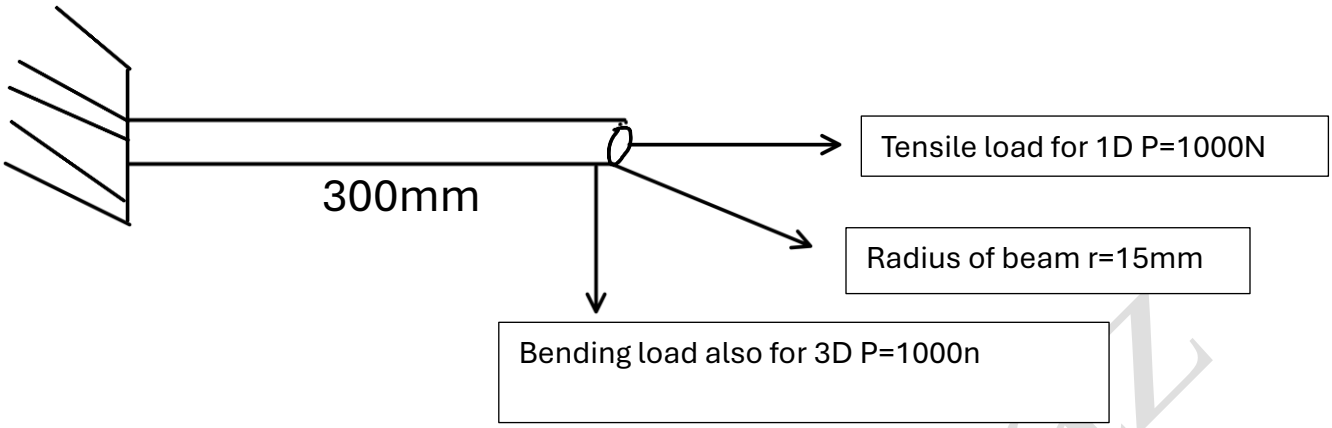

A cantilever beam is subjected to a tensile load and is also analyzed for bending. The beam has the following specifications:

- **Applied Load (P):** 1000 N, applied along the **x-axis** (tensile direction)
- **Beam Length (L):** 300 mm
- **Beam Cross-Section Radius (R):** 15 mm (circular cross-section)
- **Material:** Structural Steel
    - **Young's Modulus (E):** *Use standard value for structural steel*
    - **Poisson's Ratio (v):** *Use standard value for structural steel*

Objectives:

1. **1D Tensile Load Analysis:**
    - Find the **maximum tensile stress**
    - Find the **total deformation** (elongation)
2. **3D Bending Load Analysis (Cantilever Configuration):**
    - Treat the load as applied at the free end, perpendicular to the beam z or -y- axis (for bending)
    - Find the **maximum bending stress**
    - Find the **total deformation** (tip deflection)

Expected Results:

Provide numerical values for:

- **Maximum Stress** (in MPa or N/mm^2)

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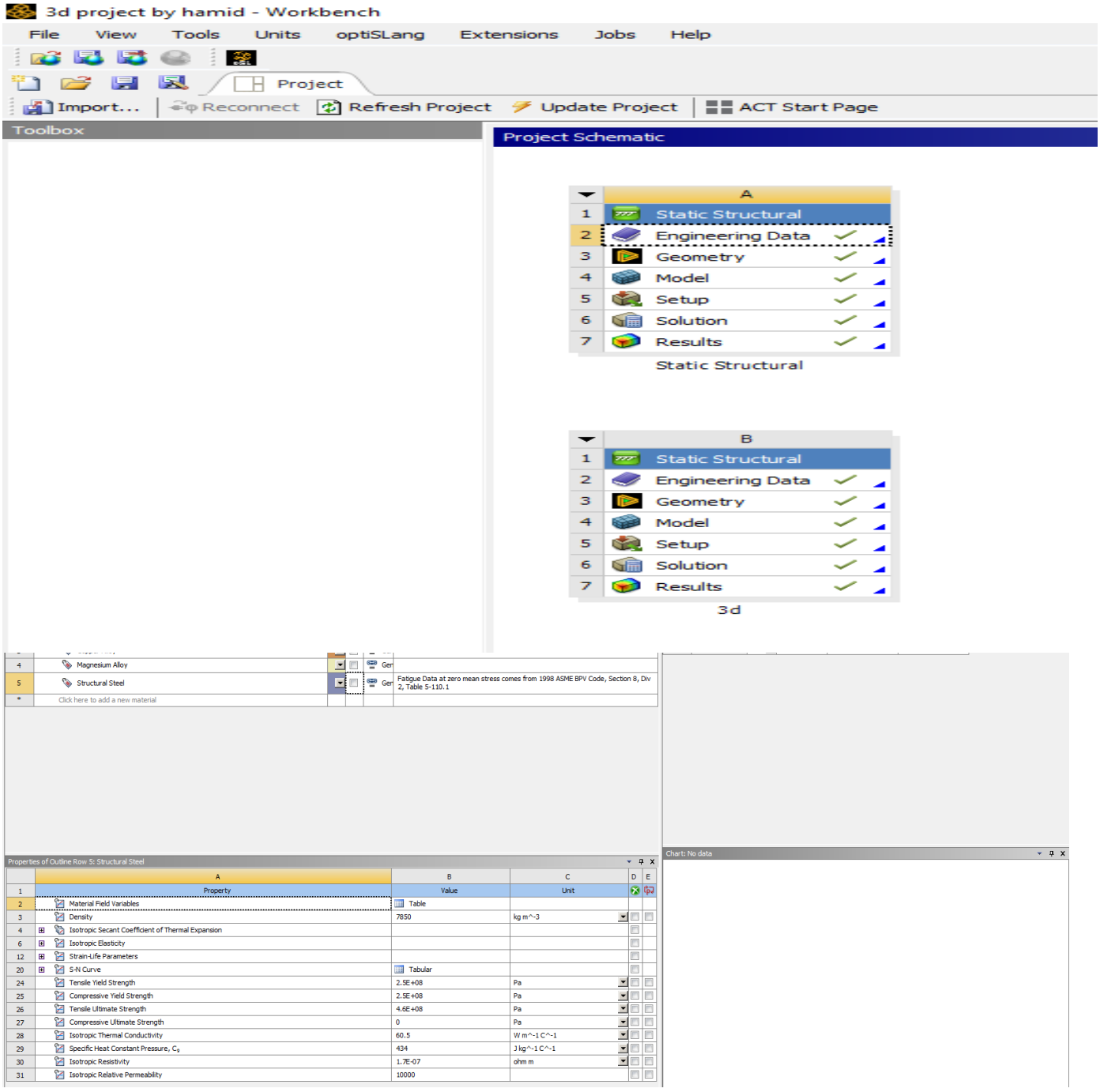
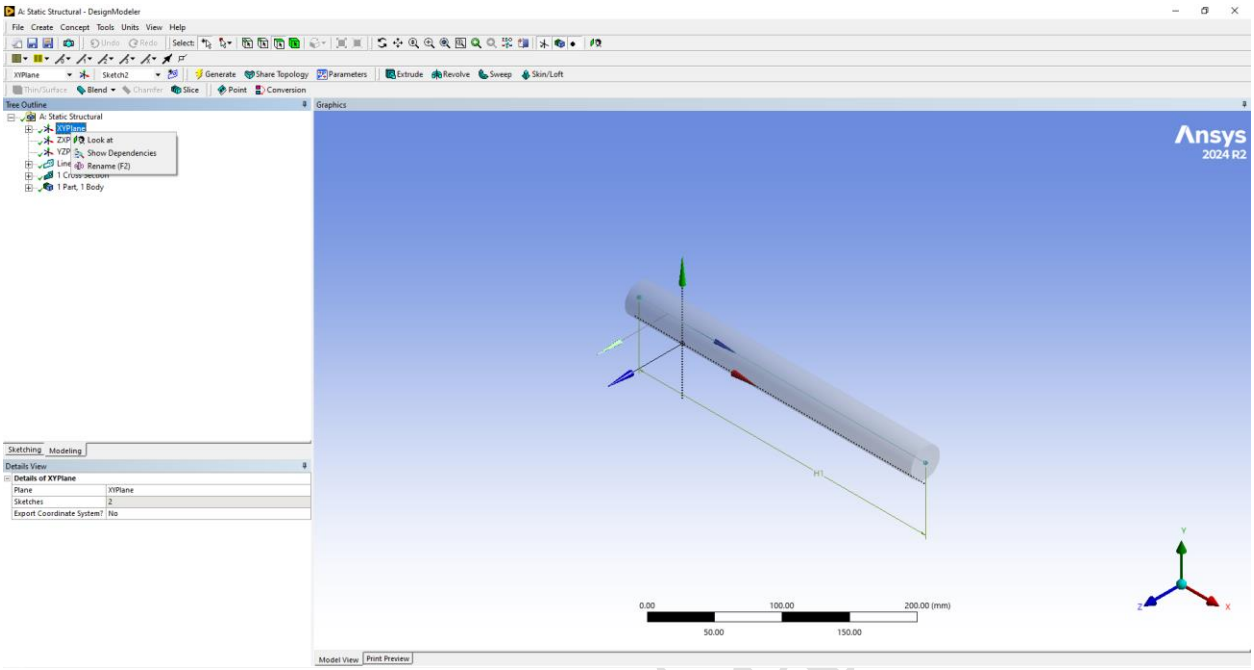
- **Total Deformation** (in mm)
  results put the screenshots from static structures to results.

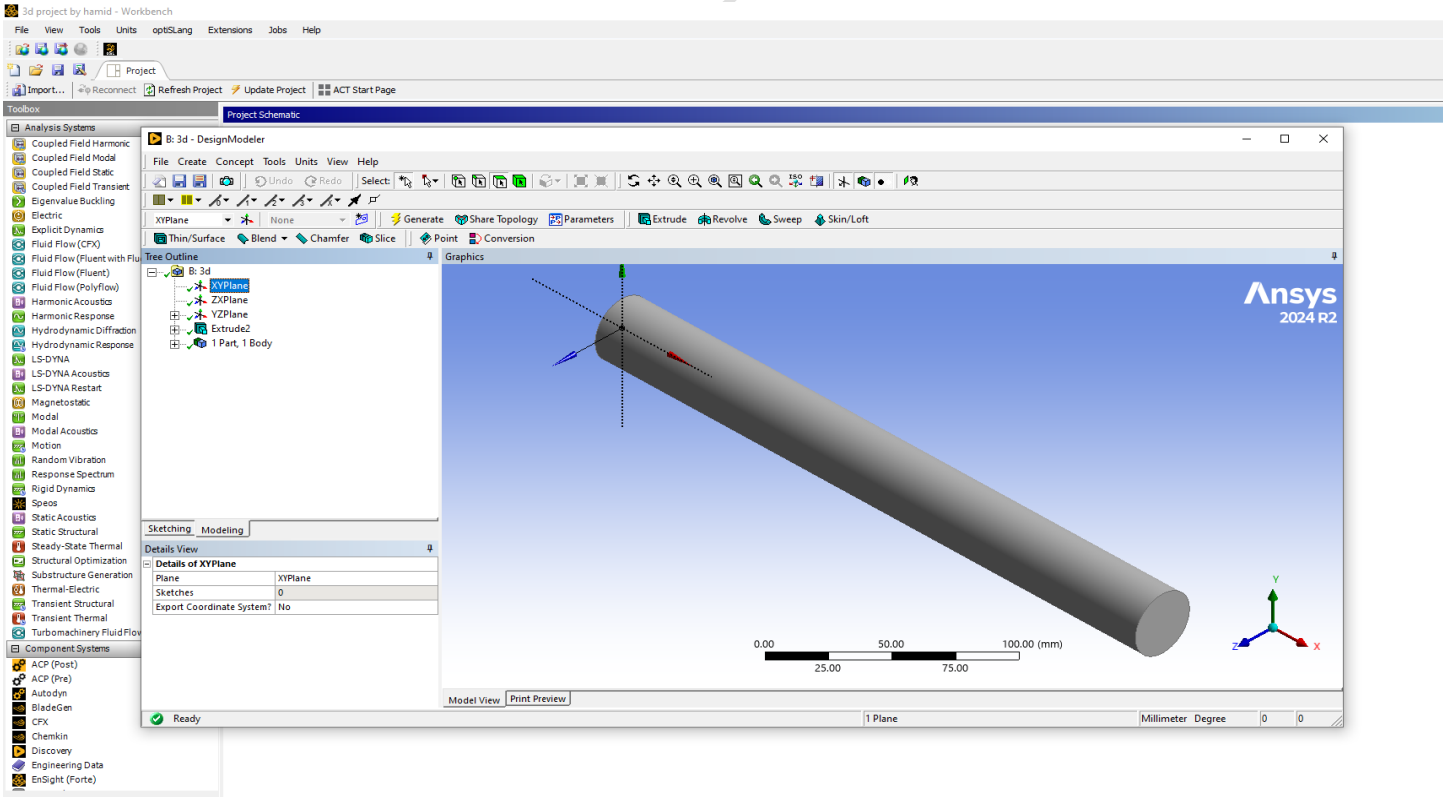
  Step 1



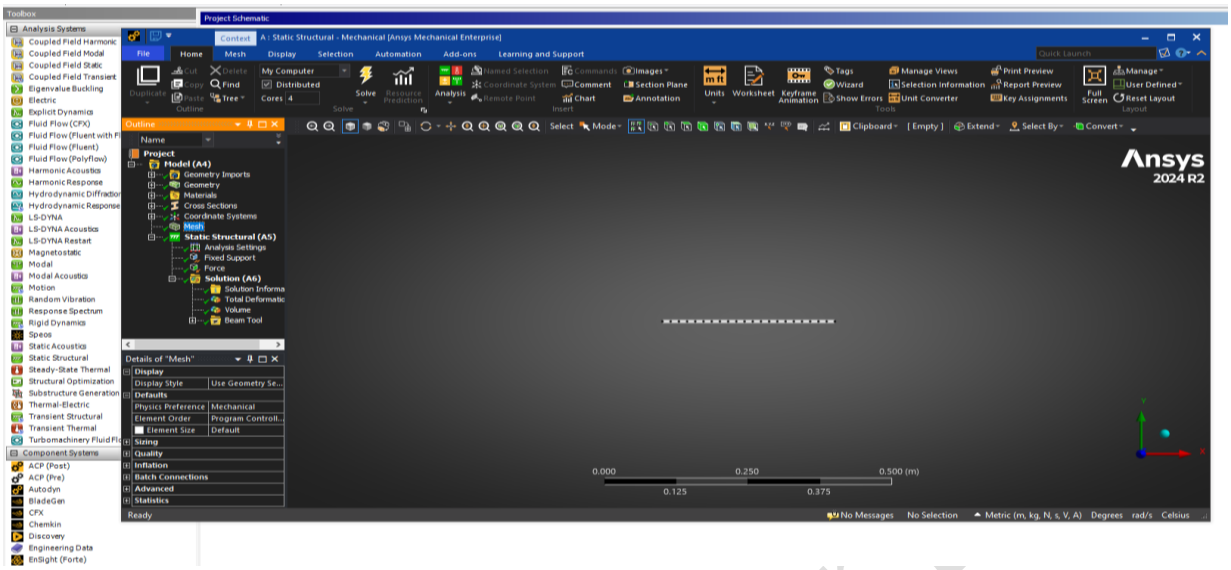
Step 3 Imaginary Geometry of 1D



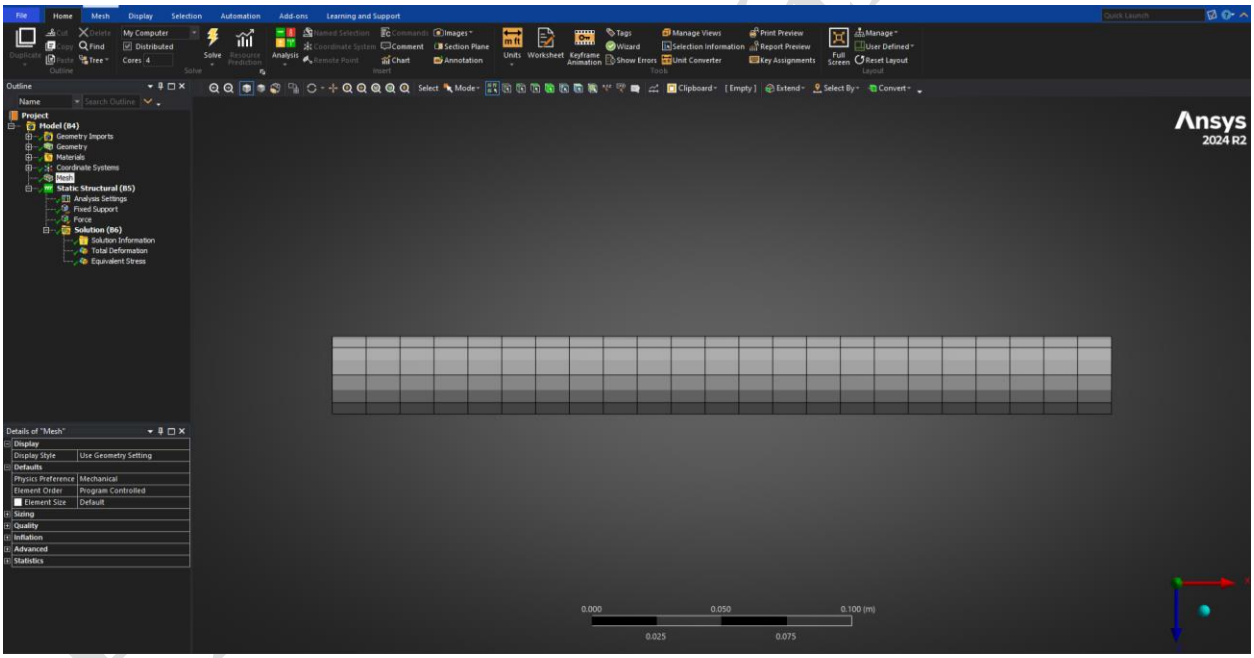
Real Geometry of 3D



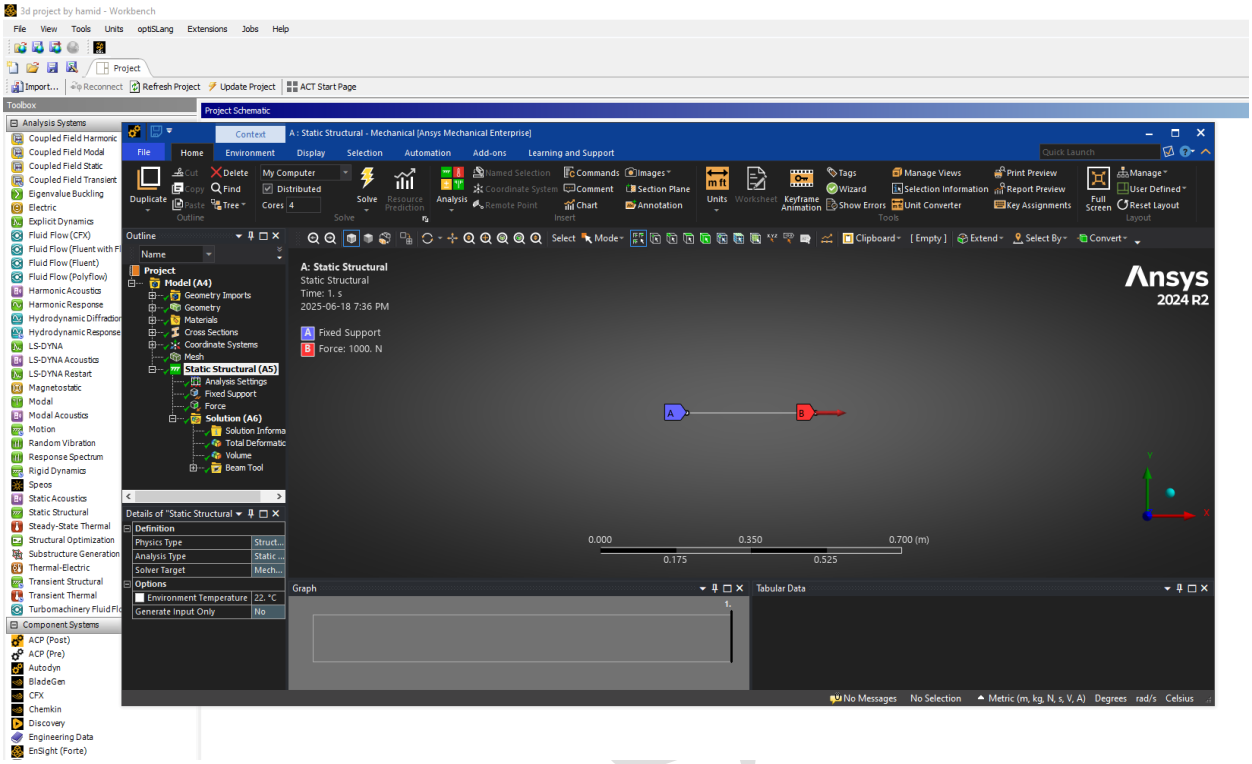
Step 4 Meshing of 1D Model



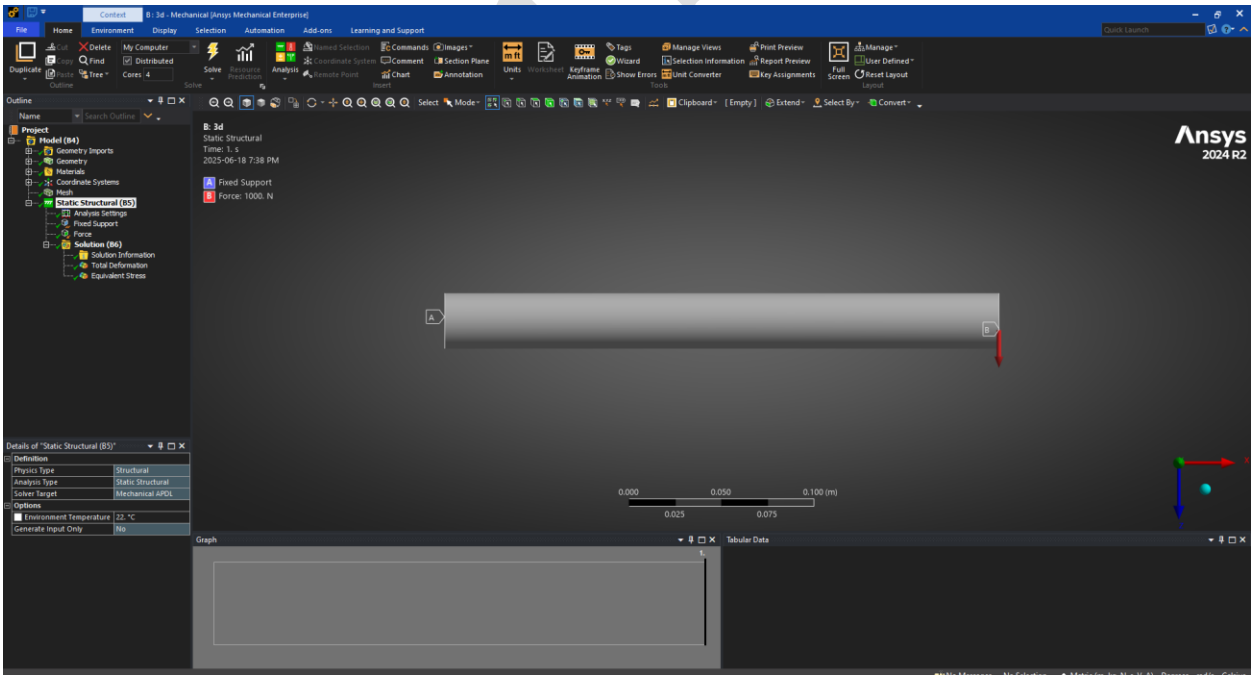
Step 4 Meshing of 3D Model



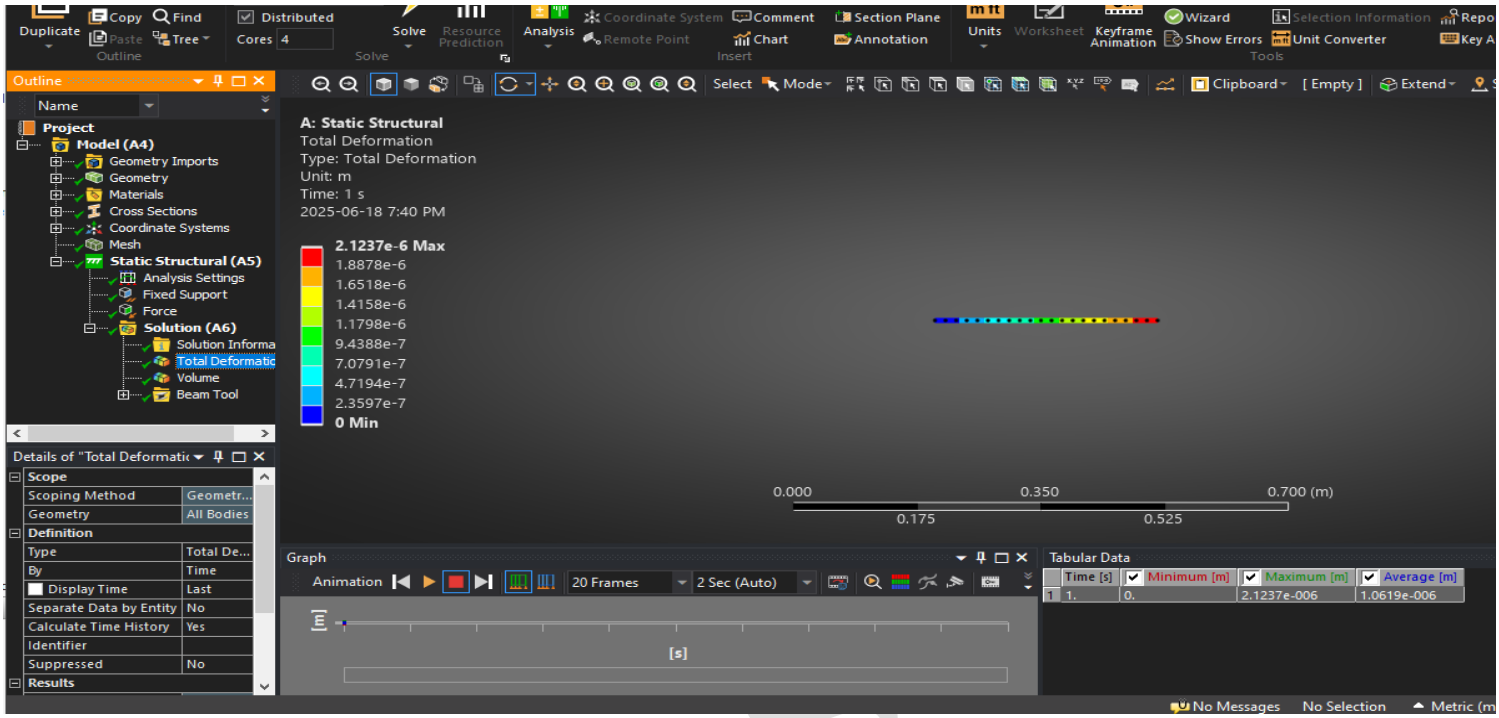
Step 5 setup for 1D

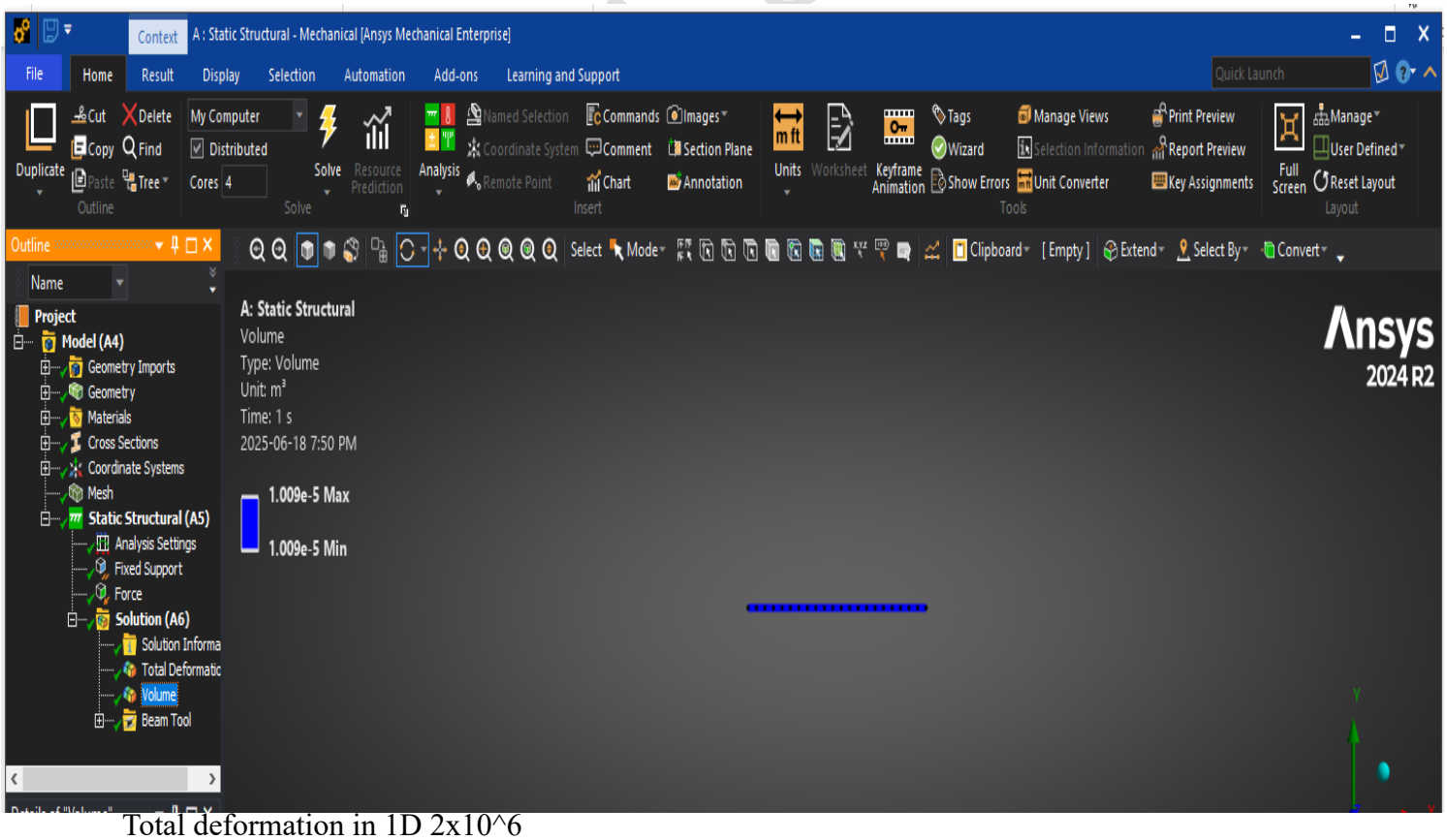


For 3D for Z-axis load

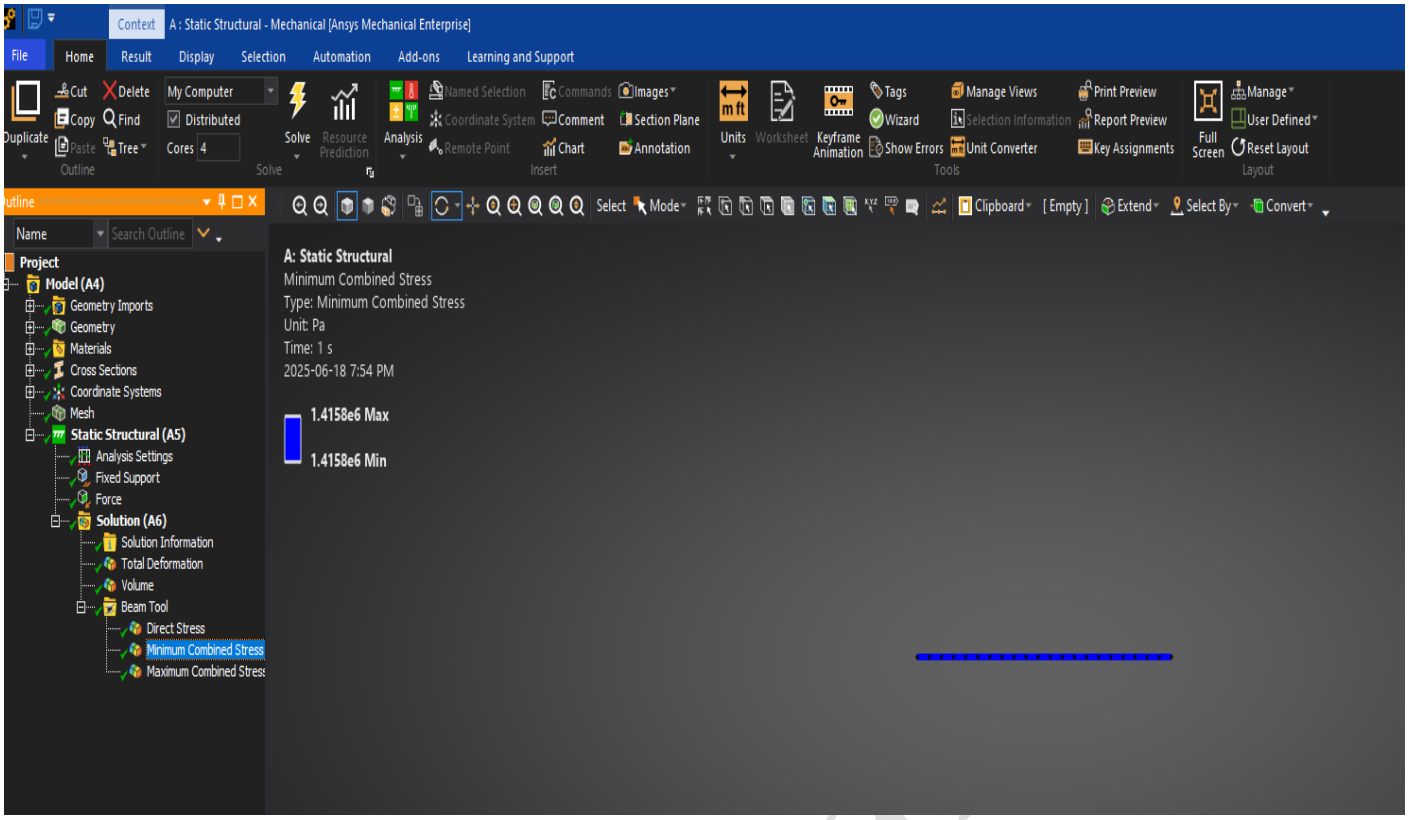


Solution of 1D Total Deformation, minimum stress and direct stress

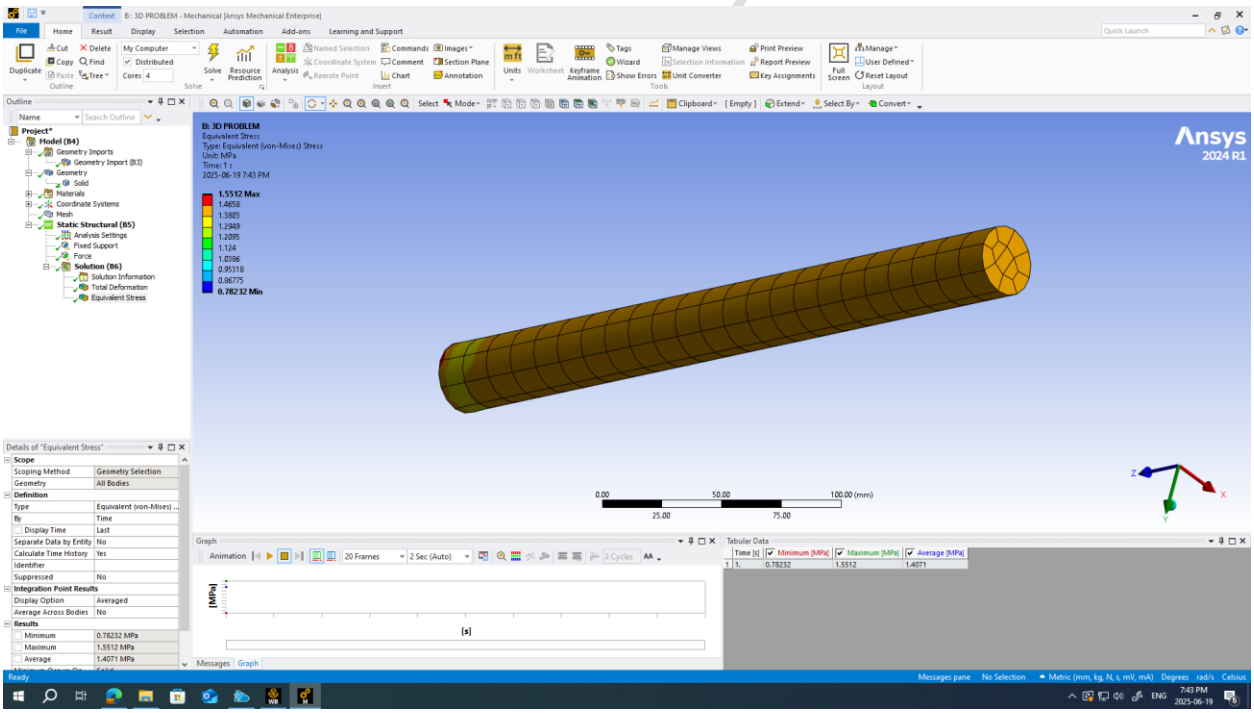




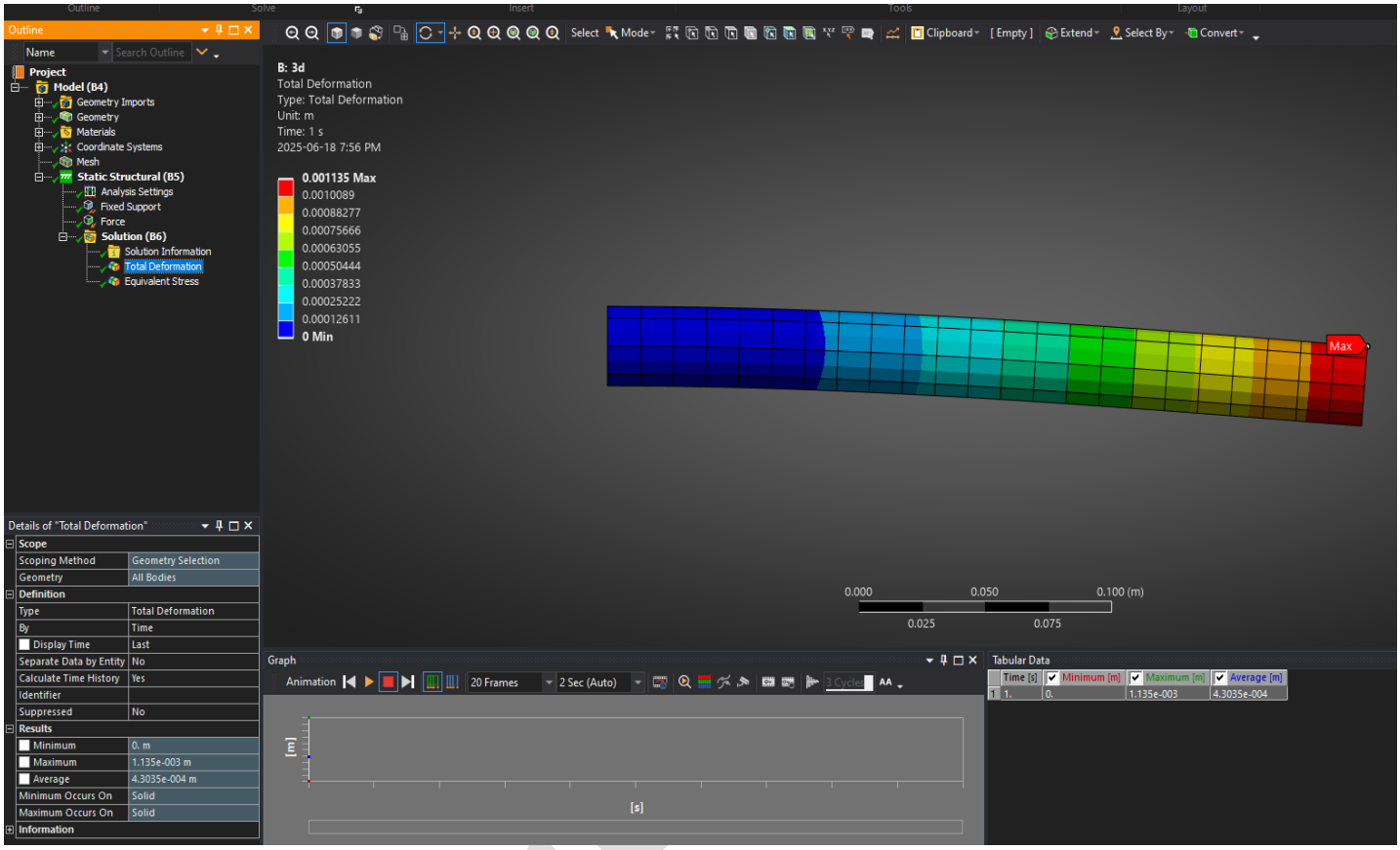
Total deformation in 1D 2x10^6

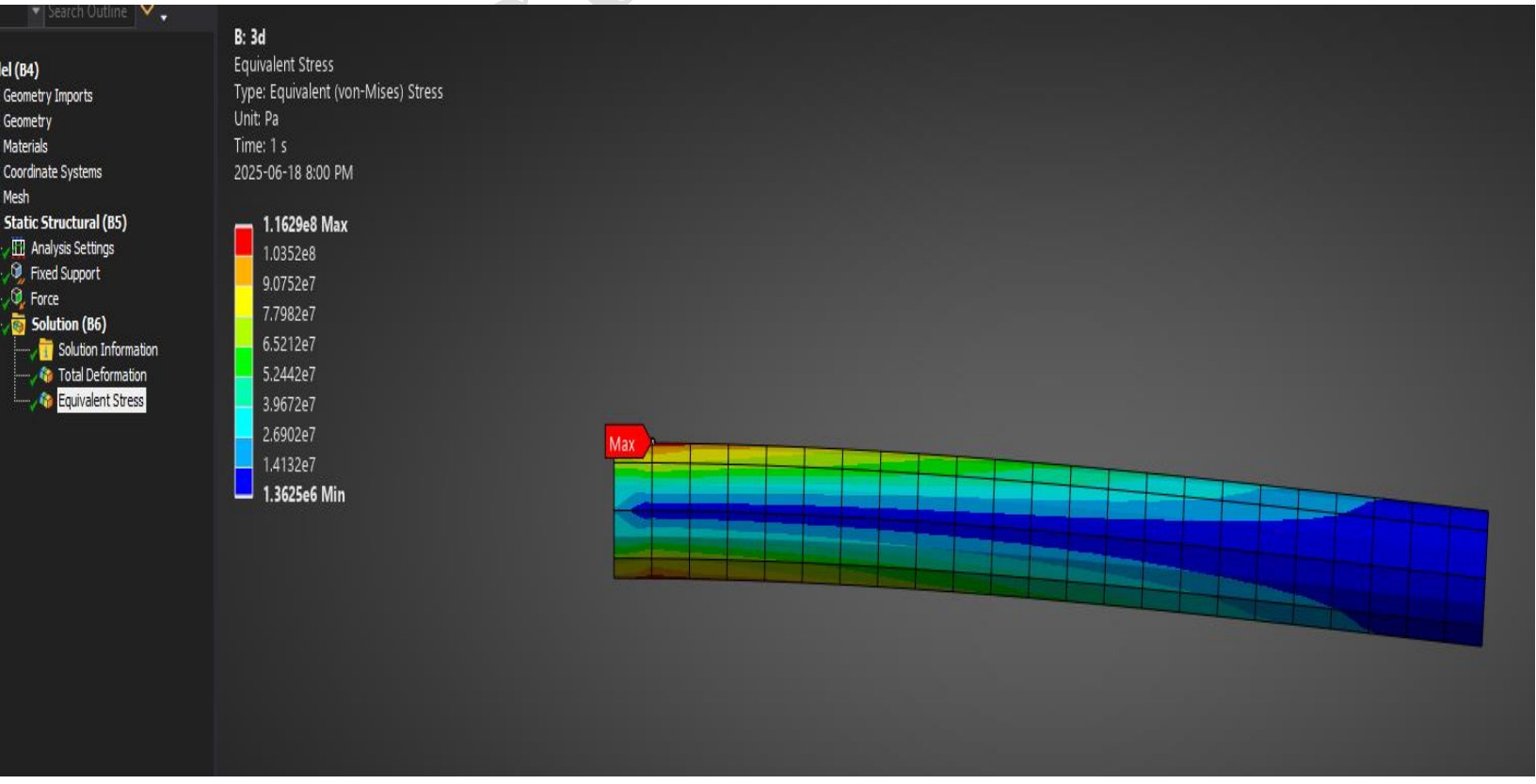


TOTAL DEFORMATION WITH TENSILE LOAD



Solution of 3D Total Deformation





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