This final project is a continuation of the model reduction projects using the same beam structure. The objective here is to study reduction effects for part of the cantilever beam structure. Only a frequency comparison is required.

**PART A - Guyan vs SEREP Reduction for 4 modes 4 DOFs for nodes 5 and 10**

Assemble half of the beam and then perform a Guyan reduction to both the translational and rotational dofs at node 5 and 10 to determine the reduced mass and stiffness of the system (for half of the beam). Assemble the balance of the beam and determine the eigenvalues.

Assemble half of the beam and then perform a SEREP reduction to both the translational and rotational dofs at node 5 and 10 using the first 4 modes of the system to determine the reduced mass and stiffness of the system (for half of the beam). Assemble the balance of the beam and determine the eigenvalues.

**PART B - Guyan vs SEREP Reduction for 4 modes 4 DOFs for nodes 2 and 10**

Assemble half of the beam and then perform a Guyan reduction to both the translational and rotational dofs at node 2 and 10 to determine the reduced mass and stiffness of the system (for half of the beam). Assemble the balance of the beam and determine the eigenvalues.

Assemble half of the beam and then perform a SEREP reduction to both the translational and rotational dofs at node 2 and 10 using the first 4 modes of the system to determine the reduced mass and stiffness of the system (for half of the beam). Assemble the balance of the beam and determine the eigenvalues.

**PART C (KREMER)- Reduction for 4 modes 4 DOFs for nodes 3 \( \theta \), 7 \( \nu \) and 10 \( \nu,\theta \)**

Assemble half of the beam and then perform a reduction of your choice to dofs identified to determine the reduced mass and stiffness of the system (for half of the beam). Assemble the balance of the beam and determine the eigenvalues of the system.

Only a frequency comparison is required for this evaluation. The results should be presented with a discussion on the differences between the different models compared to those results of the reference cantilever beam used for the other projects.

*This data is to be presented in a report format as well as orally presented sometime during December.*