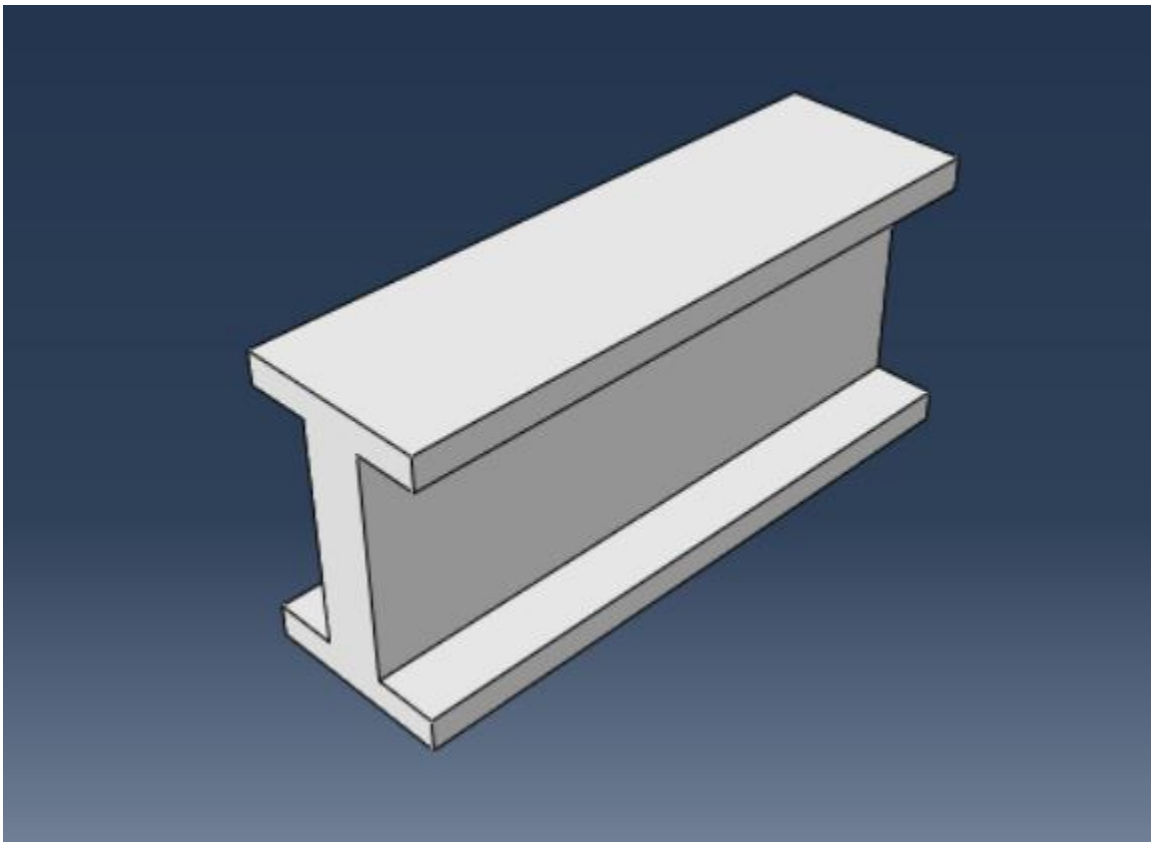
Project 8: ABAQUS material and geometric nonlinearity

Problem Statement: Model the deformation of a material with plastic properties and NLGEOM=ON.

Geometry:



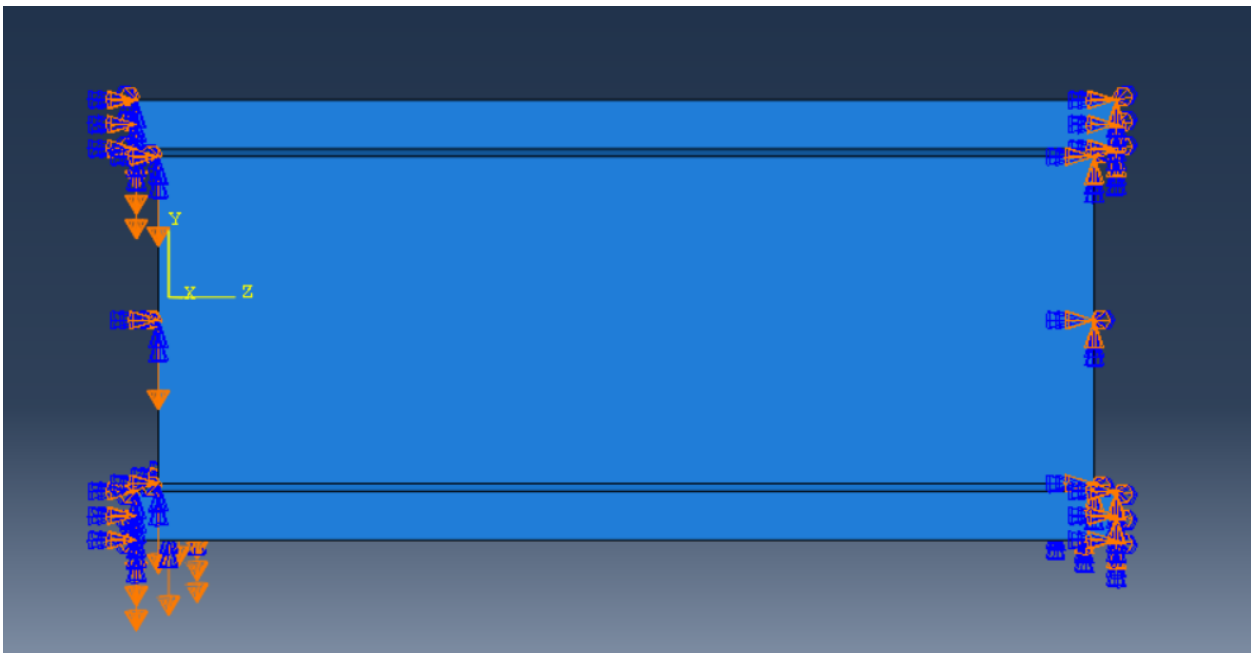
Material Properties:

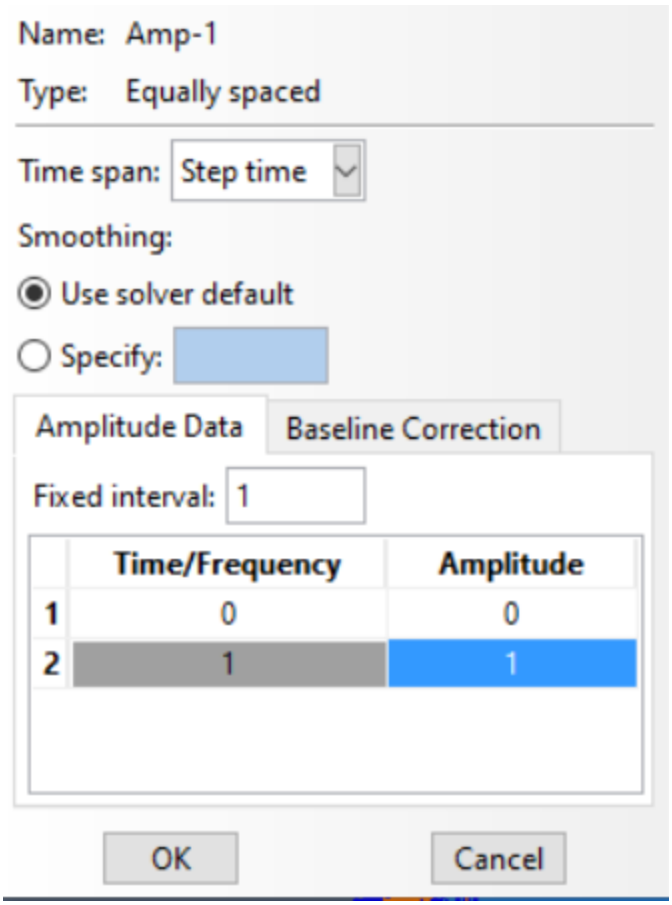
Young's Modulus	Poisson's Ratio
210000	0.3

Yield Stress	Plastic Strain
120	0
200	3

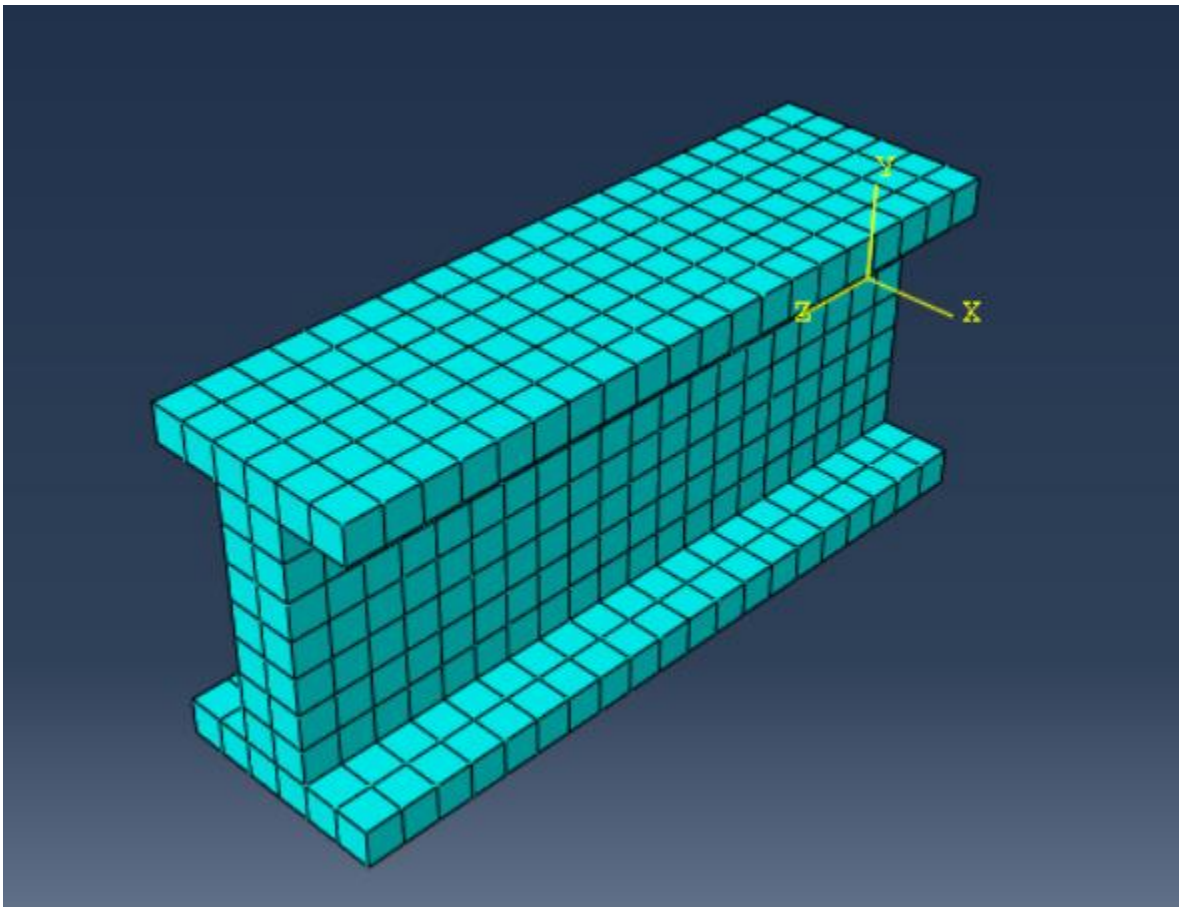
Loading and boundary conditions:

1) One end is fixed, and loading with amplitude is applied in the other end.



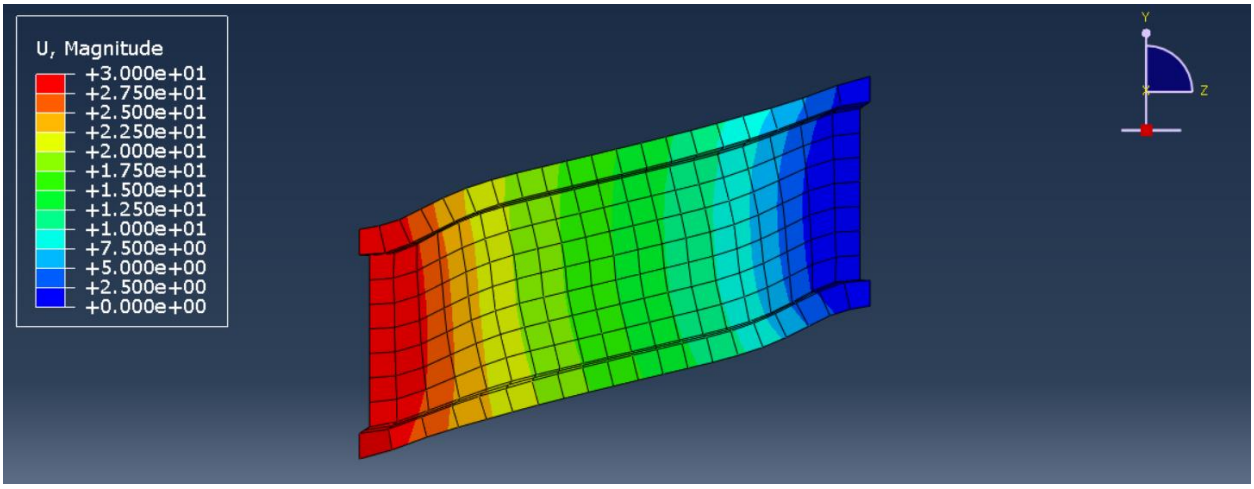

Name: Amp-1
Type: Equally spaced
Time span: Step time
Smoothing:
Use solver default
Specify:
Amplitude Data
Baseline Correction
Fixed interval: 1
Time/Frequency
Amplitude
1
0
0
2
1
1
OK
Cancel

Mesh: (coarse due to limitation of 1000 nodes in ABAQUS educational version).



Results:

Deformation:



Mises stress: