Trapezoidal Cantilever With Openings

www.calculixforwin.com

Ref. Movies: | 1 | 2 | 3 | 4 |

Input data:

_Cantilever.STEP file with geometry (in inches); material: steel, Tip load = 1500 lb, fixed end.

1. Static analysis. Solidworks Simulation/ANSYS/CalculiX

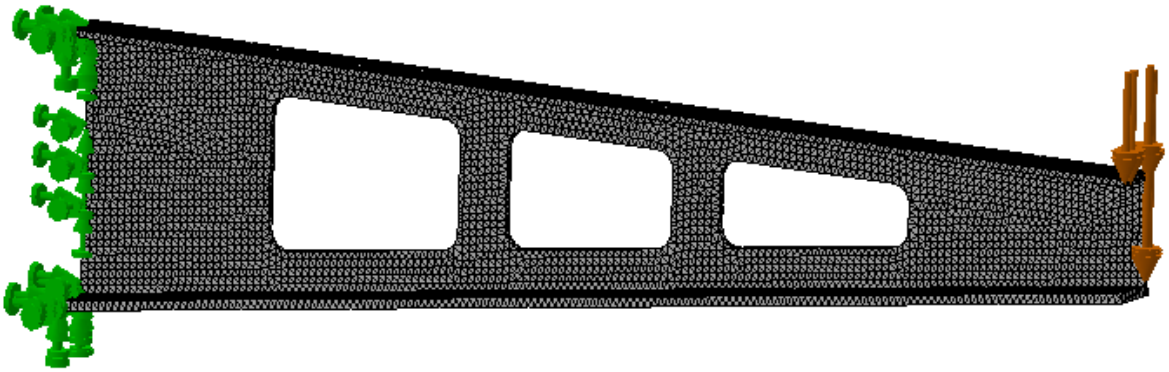


Fig. 1 - SolidWorks Simulation. 1500 lb applied to the end

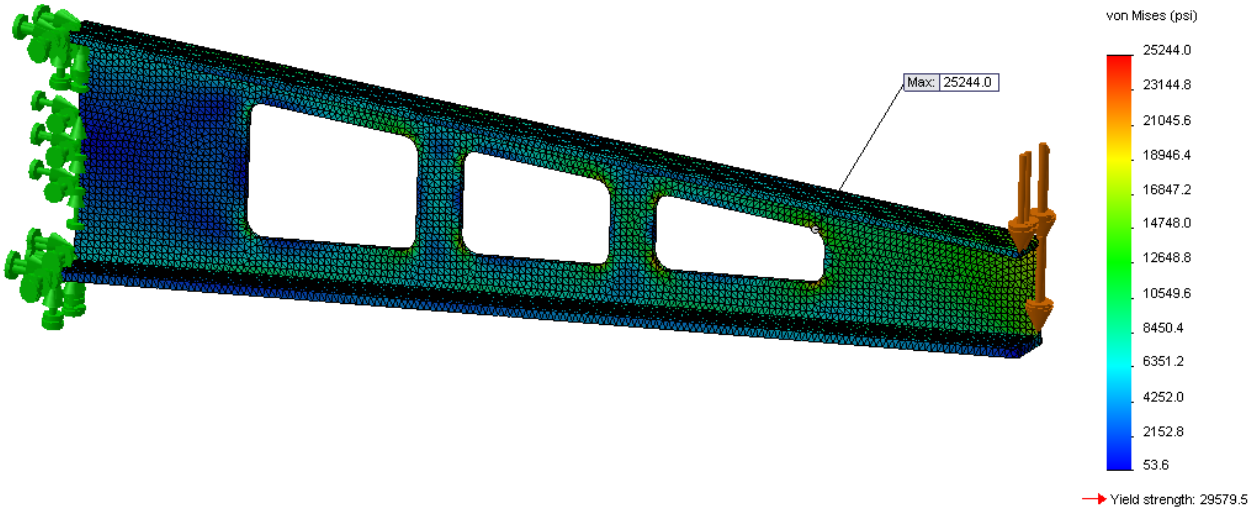


Fig. 2 - SolidWorks Simulation. Von Mises stress 25,244 lb

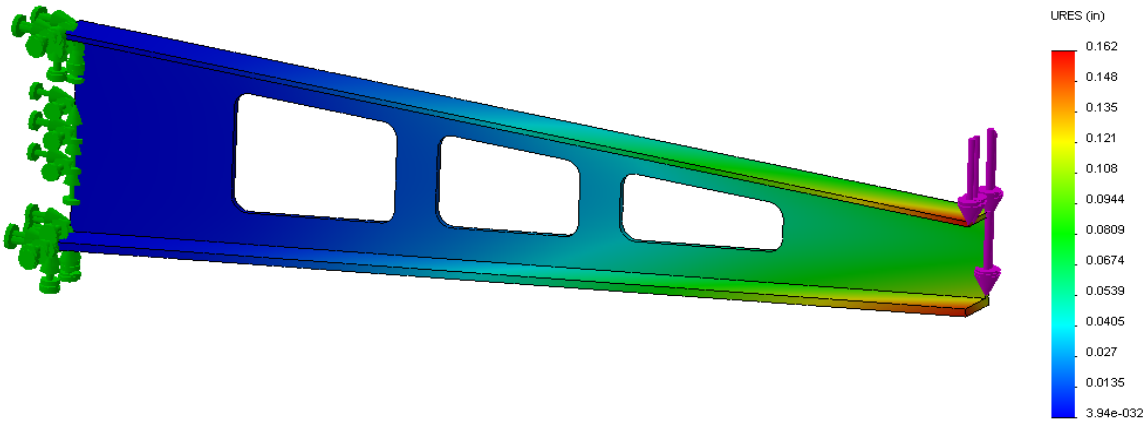
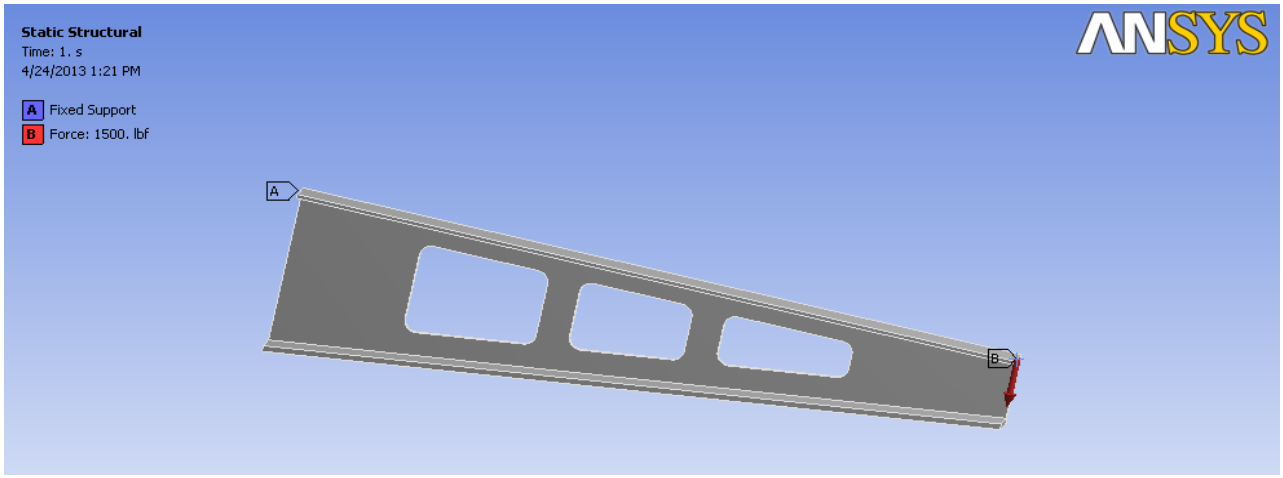


Fig. 3 - SolidWorks Simulation. Max. Displacements = 0.162 in



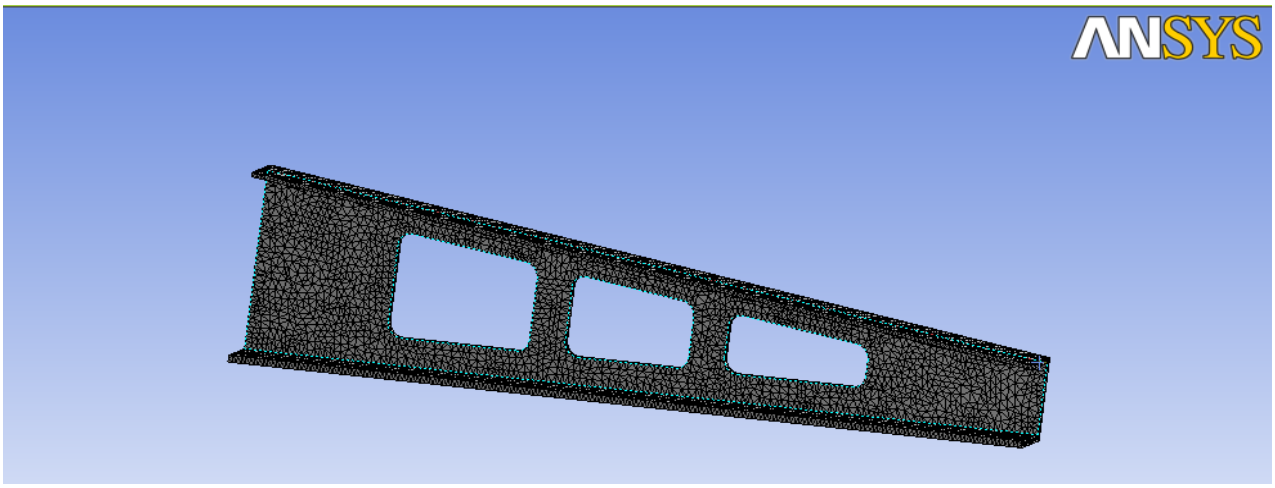


Fig. 4 ANSYS - Boundary Conditions and mesh

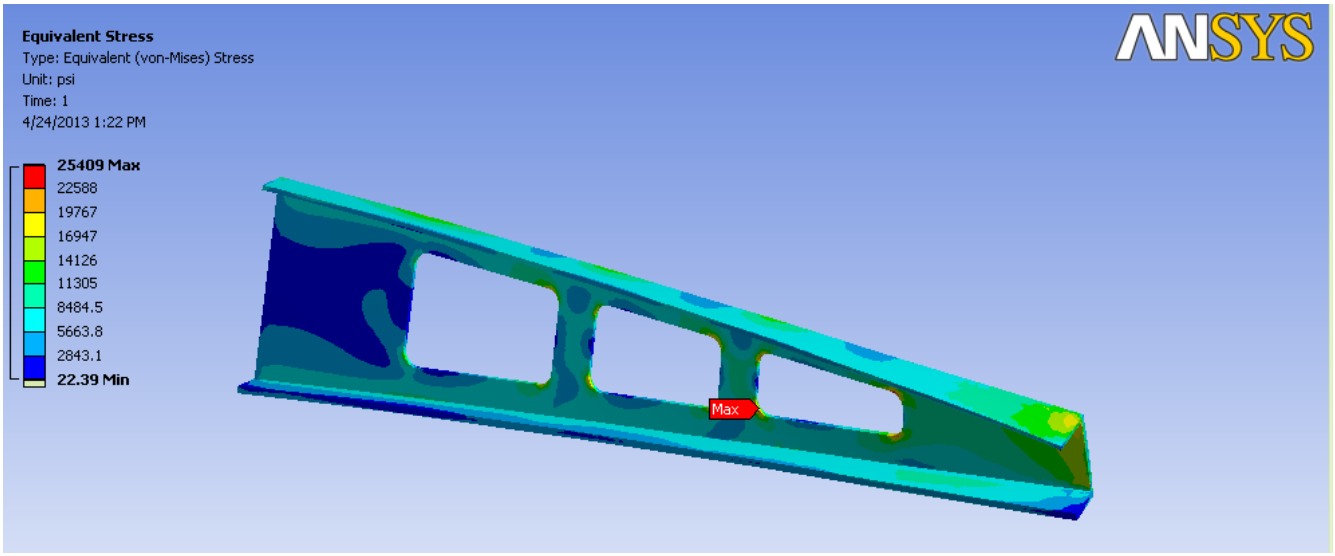


Fig. 5 - ANSYS, Von Mises Stress (max. 25,409 psi)

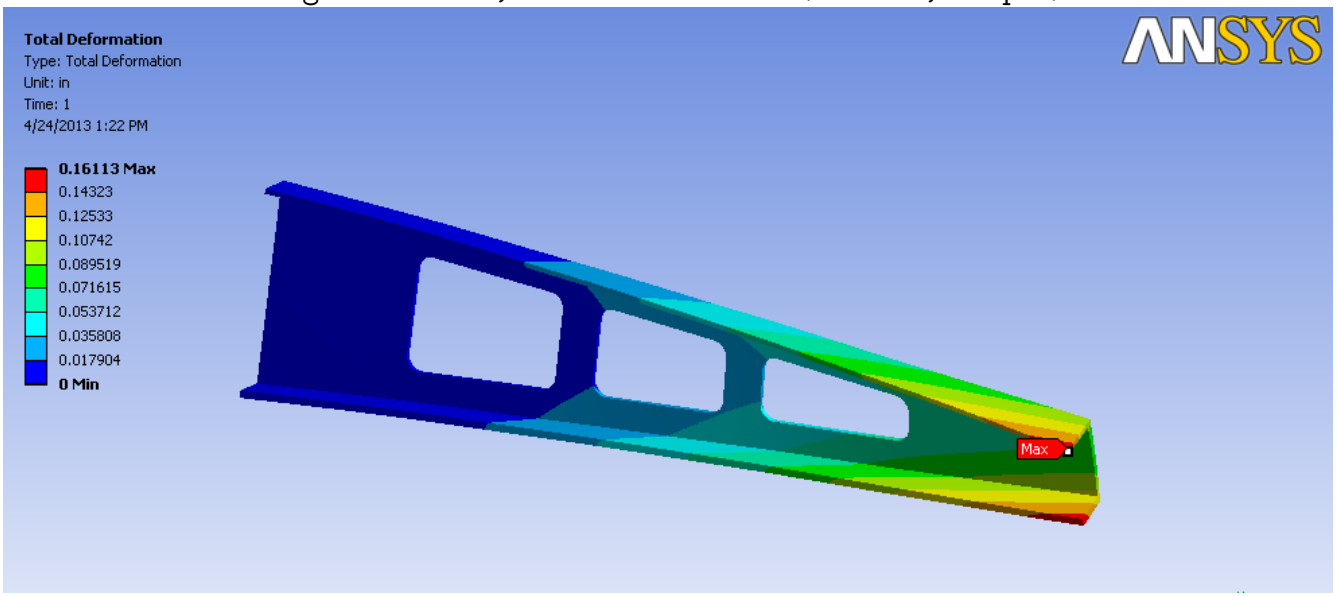


Fig. 6 - ANSYS/ Displacements (Max = 0.161 in)

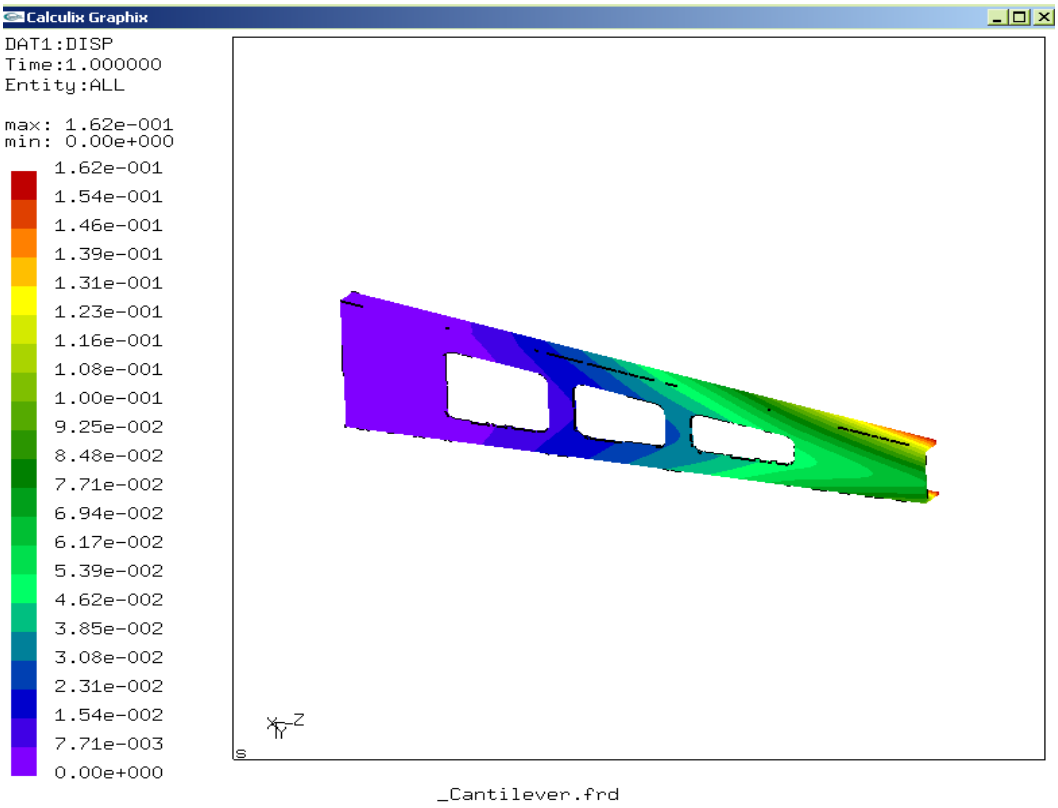


Fig. 7 CalculiX, Displacements (max 0.162 in)

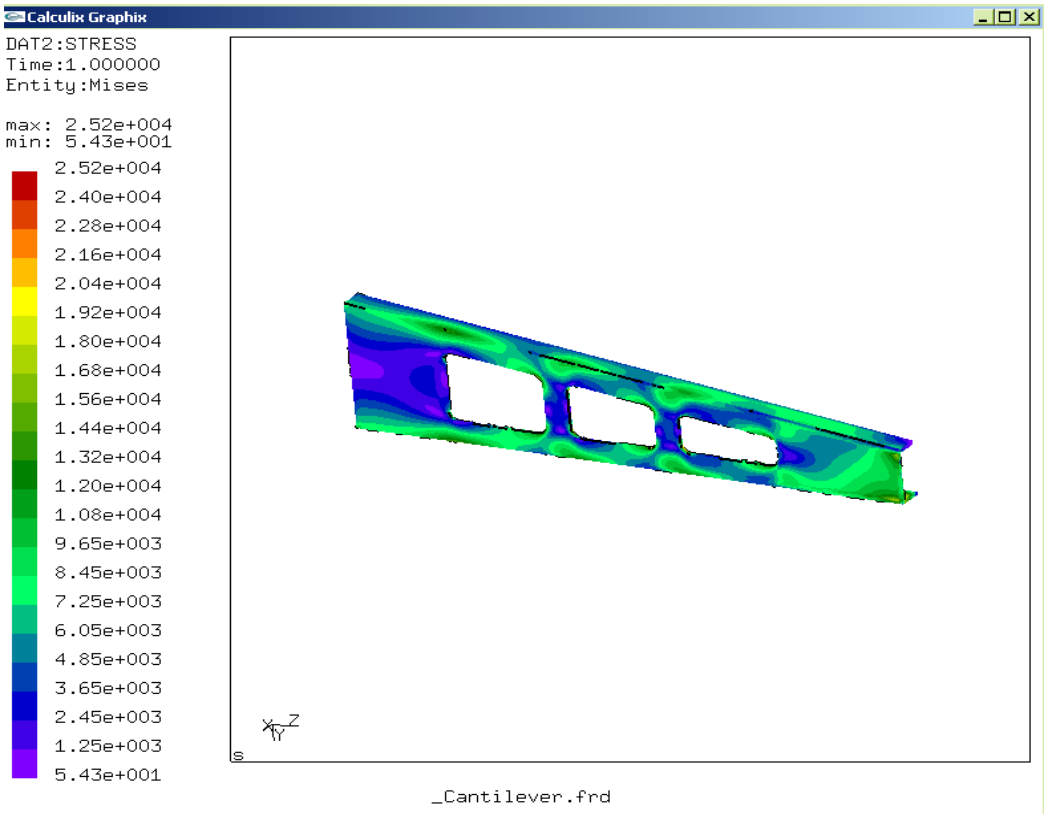


Fig. 8 - CalculiX, von Mises stress (max. 25,200 psi)

2. Buckling and Modal analysis.(ANSYS/CalculiX)

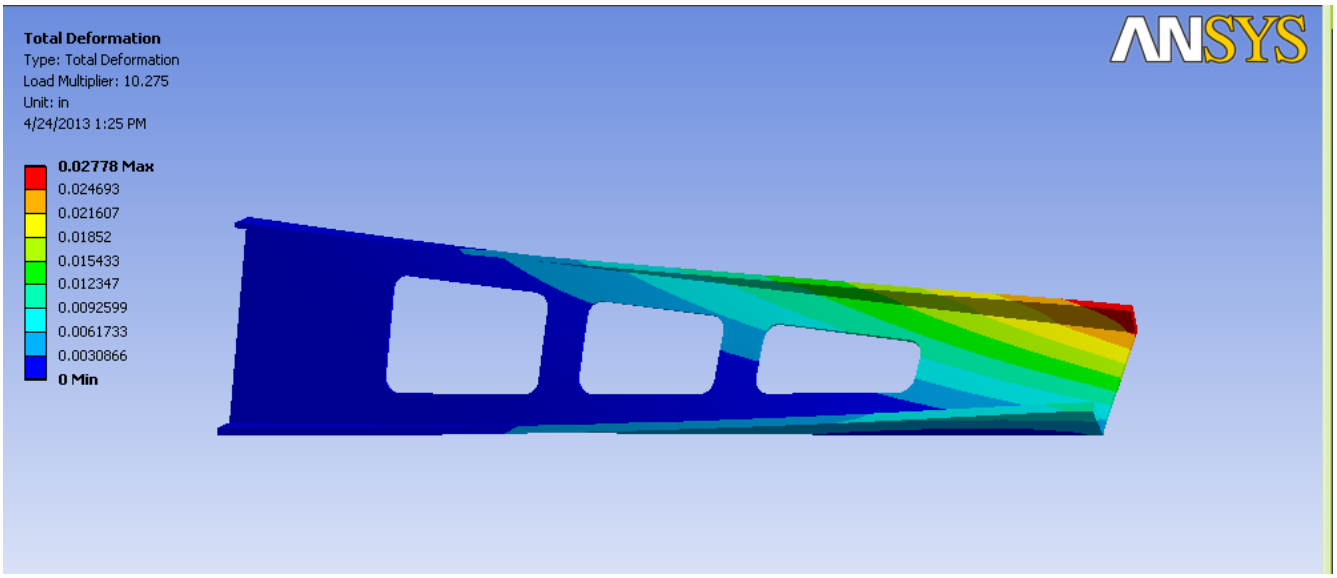


Fig. 9 Buckling (for static load above). 1st form, Factor = 10.275

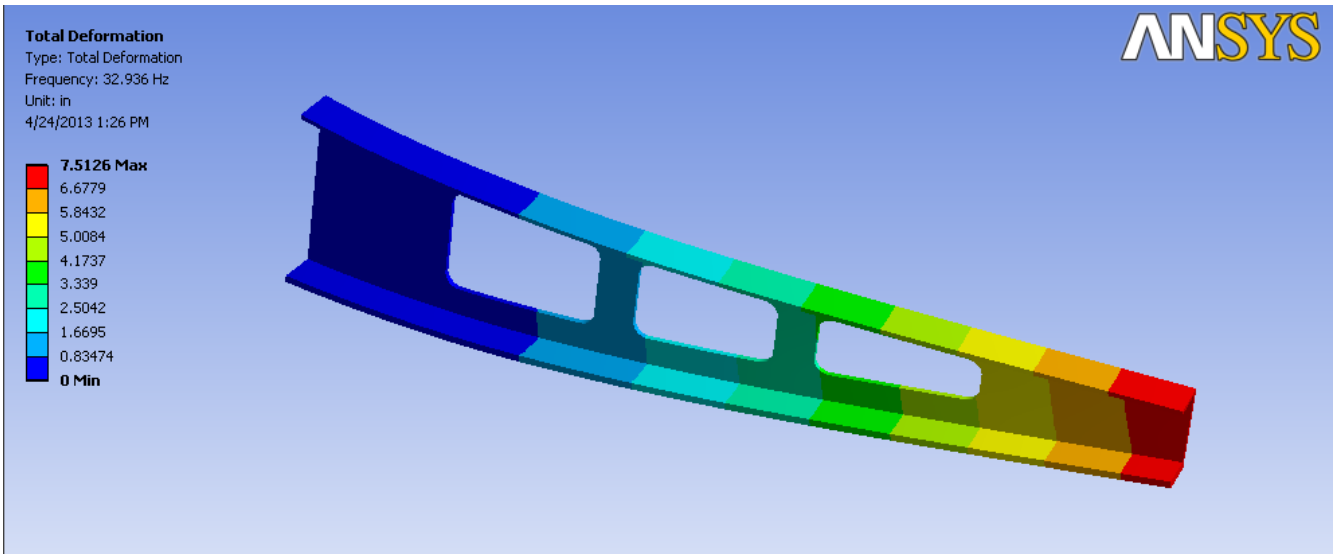


Fig. 10 - Modal analysis. 1st form, f_1=32.936 Hz

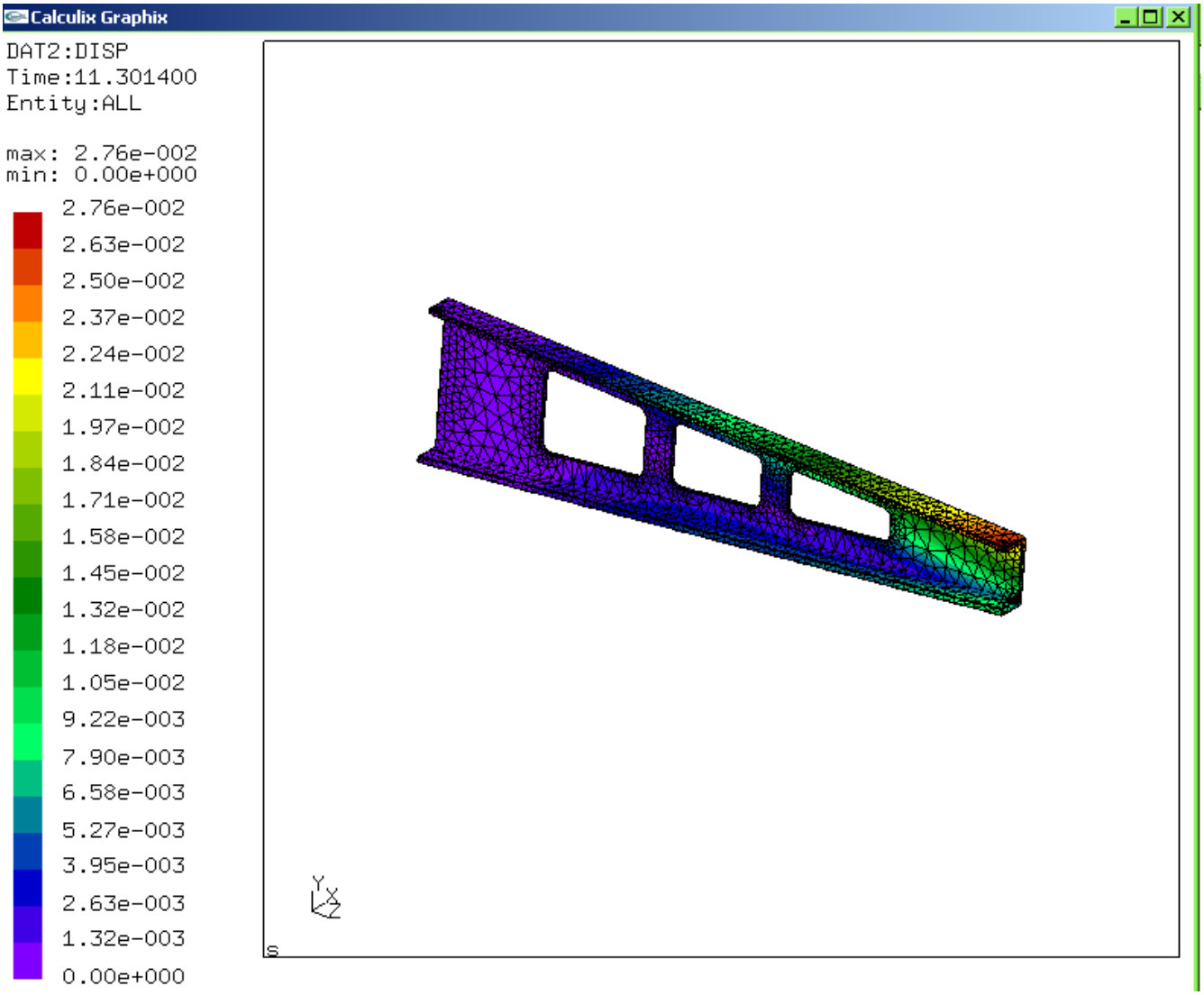


Fig. 11 - Buckling, CalculiX, 1st form, Factor = 11.3 (the difference due to mesh)

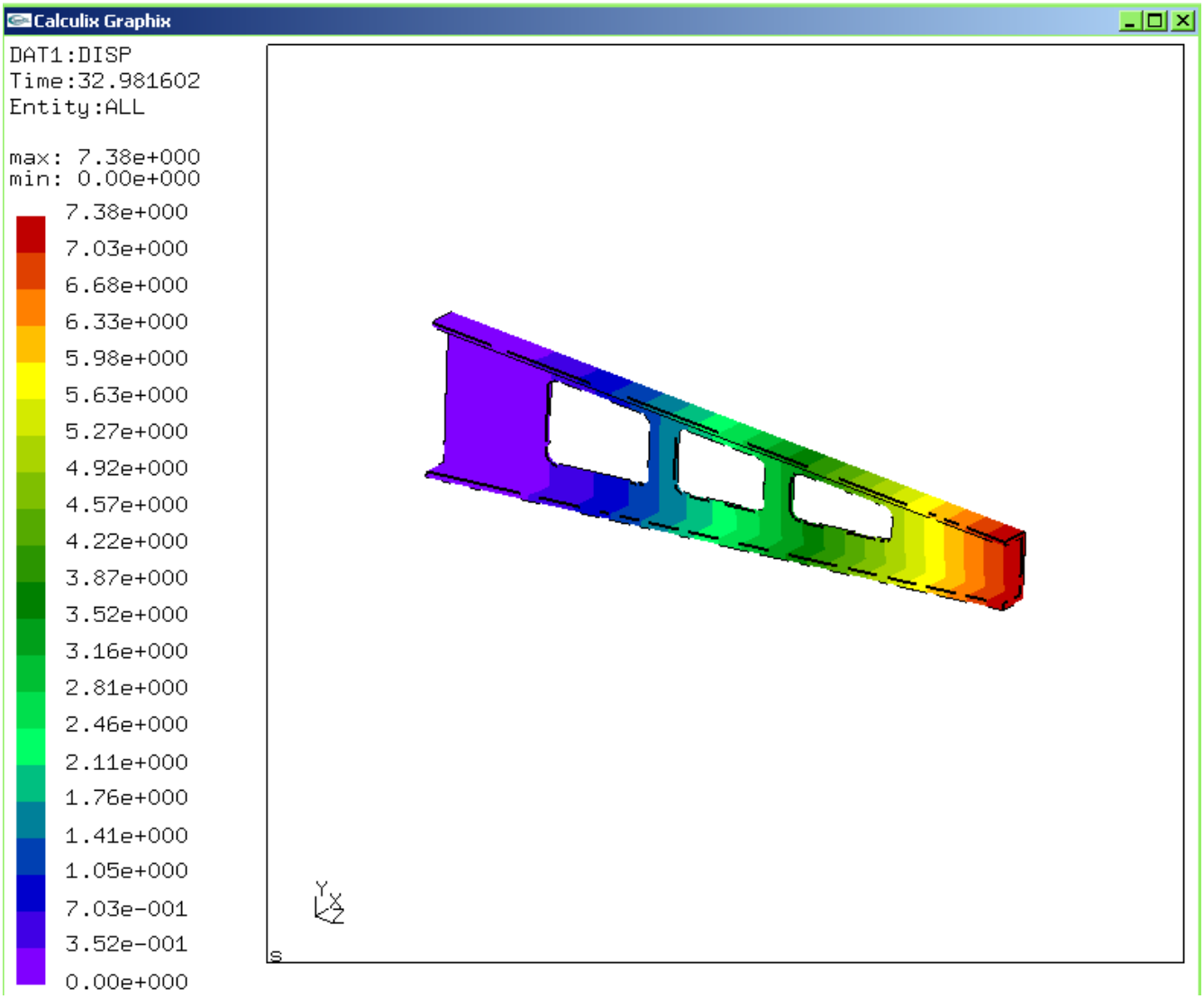


Fig. 12 - Modal analysis, CalculiX, 1st form, f_1=32.98 Hz.