

LINEAR STATIC ANALYSIS OF A TRUSS STRUCTURE

Application Note

Objectives:

- Create an Akselos model using beam elements
- Visualize analysis results

Model Description:

The structure is comprised of truss segments connected by smooth pins. The structure has a pinned support at *Point 1* and is supported by a roller at *Point 7*. Point forces are applied at *Points 2, 4, and 6*. In addition, out of plane translations and all rotations shall be constrained for all Points.

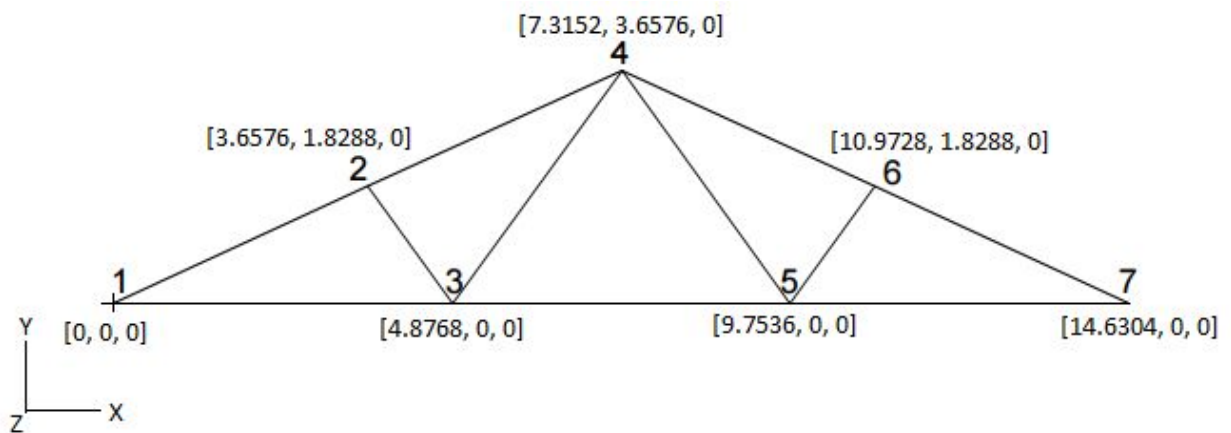


Figure 1: Beam system schematic

Load and Boundary Conditions are shown in the figure below:

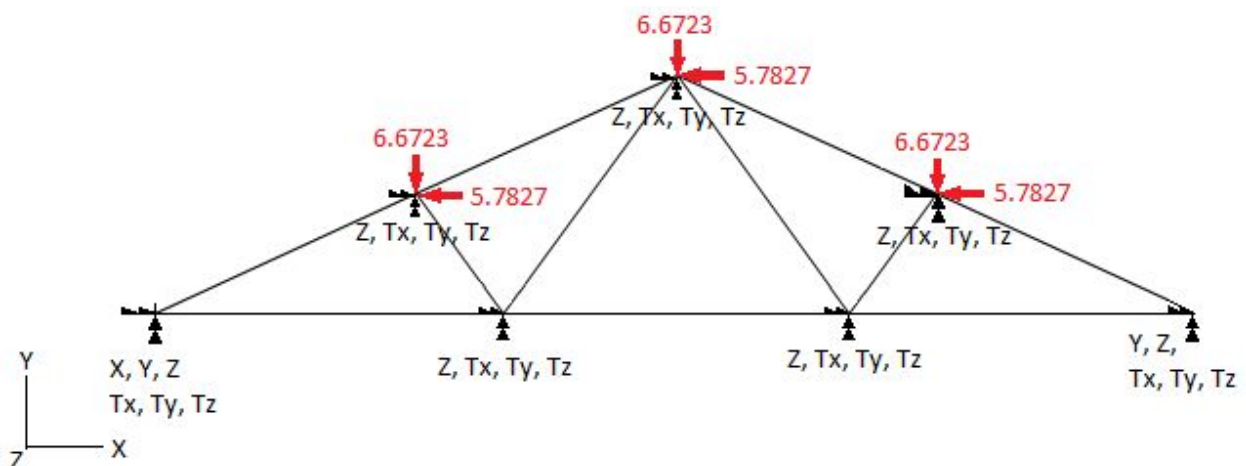


Figure 2: Loads (kN) and Boundary Conditions (DOFs listed should be constrained)

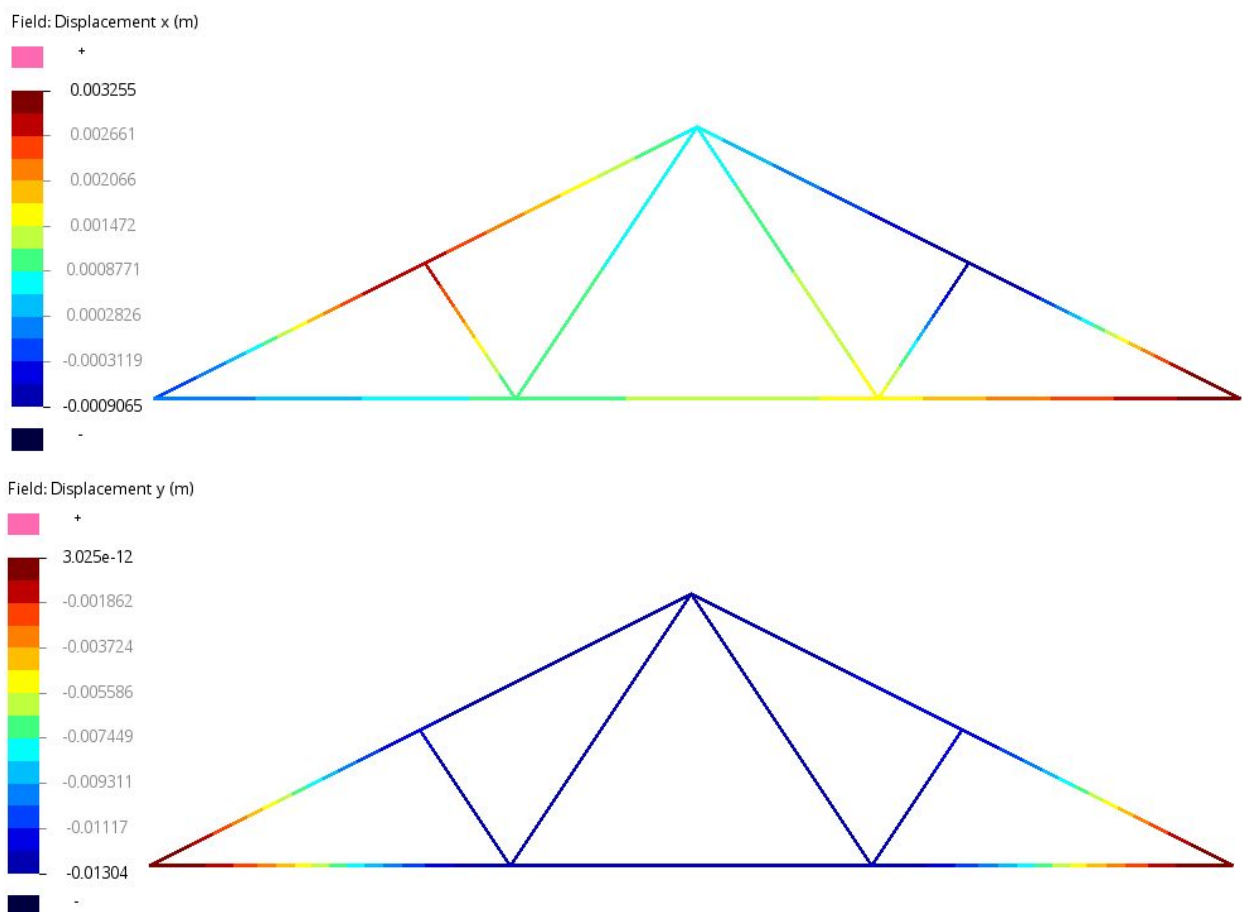
Model properties:

Cross-Sectional Area	3387.1 mm ²
Elastic Modulus	12.1 GPa
Poisson Ratio	0.3

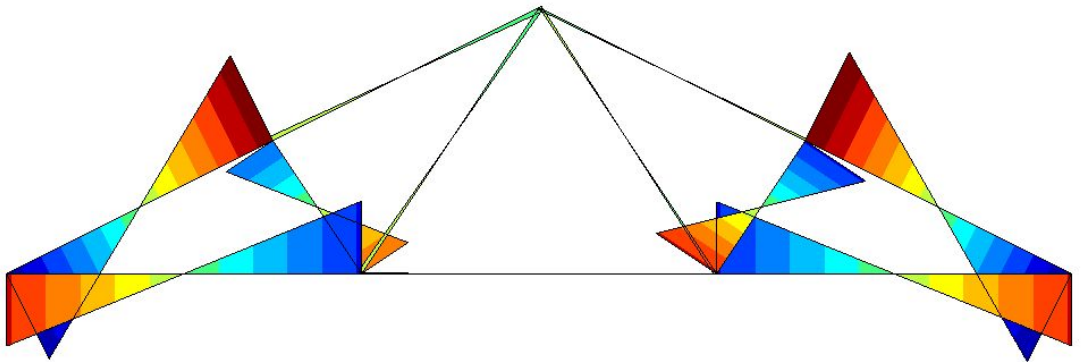
Suggested Exercise Steps:

- Build the truss geometry as shown in Figure 1 on the XY plane by using 1D beam elements.
- Define material properties
- Apply boundary conditions and Beam point loads
- Solve model with Akselos solver
- Review results

Results:



Field: Bending moments (m kN)



About Akselos

Akselos is a digital technology company headquartered in Switzerland, with operations in Europe, the USA and South East Asia. The company has created the world's most advanced engineering modeling, and fastest simulation technology, to protect the world's critical infrastructure today and tomorrow. The technology has the power to revolutionize how we build and manage our critical infrastructure, and pushes the boundaries of what modern engineering and data analytics can achieve. Developed by some of the world's best minds, the MIT-licensed technology builds something far beyond the capability of a conventional digital twin – a digital guardian that allows operators to not only monitor an asset's condition in real time, but helps them to see the future.



North America

AKSELOS, Inc
210 Broadway, #201 |
Cambridge,
MA | 02139, USA

Europe/Middle East/Africa

AKSELOS S.A.
EPFL Innovation Park, Building D
1015 Lausanne, Switzerland

Asia-Pacific

AKSELOS Vietnam
125/167 Dinh Tien Hoang
street, Binh Thanh Dist.
Ho Chi Minh city, Vietnam