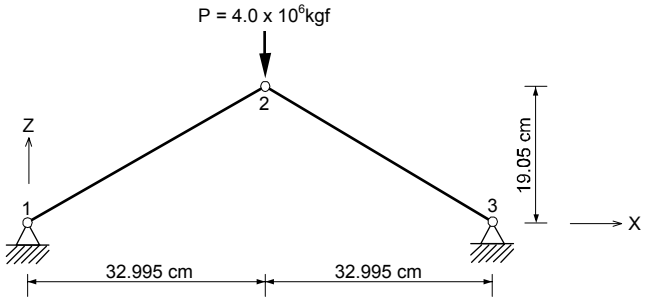
GNL-3

Title

Buckling/postbuckling analysis of a truss structure (snap through)

Description

A truss structure is subjected to a concentrated load at the node 2.
Determine the vertical displacement at the node 2.



Structural geometry and analysis model

MODEL

Analysis Type

2-D geometrical nonlinear analysis

Unit System

cm, kgf

Dimension

Length 65.99 cm Height 19.05 cm

Element

Truss element

Material

Modulus of elasticity $E = 7.03\times10^5$ kgf/cm^2
Poisson's ratio $\nu = 0.0$

Sectional Property

Area: 96.77 cm^2

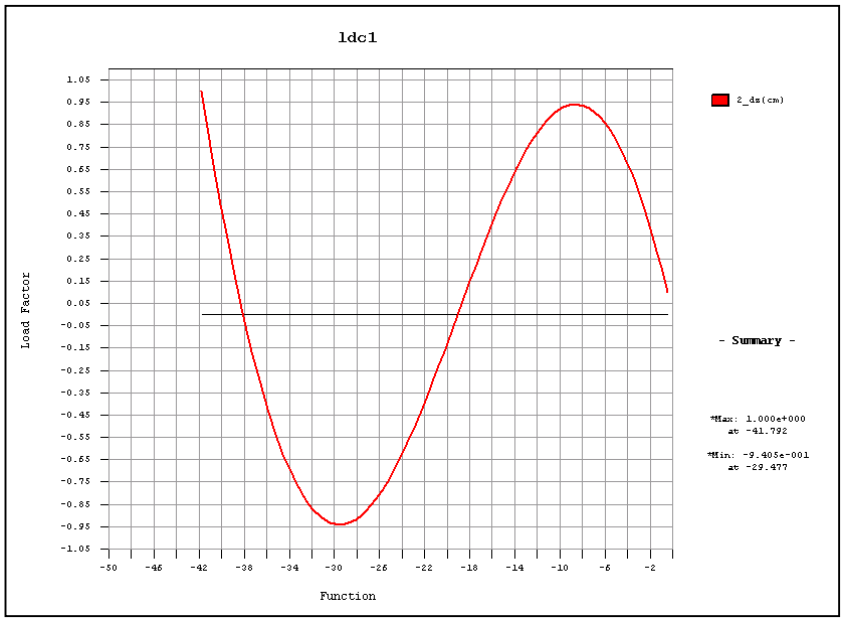
Boundary Condition

Node 1, 3: Constrain all D_X and D_Z

Load Case

Load at the limit point: 4.0×10^6 kgf

Results



Stage/Step Graph

Comparison of Results

Unit: cm

Result	Ref. 1	MIDAS/Civil
Displacement (δ_Z)	-8.40	-8.75

Reference

Hill, C.D., Blanford, G.E. and Wang, S. T., "*Postbuckling analysis of steel space structures*", Journal of structural Engineering, Vol.15, pp.529~521, 1979