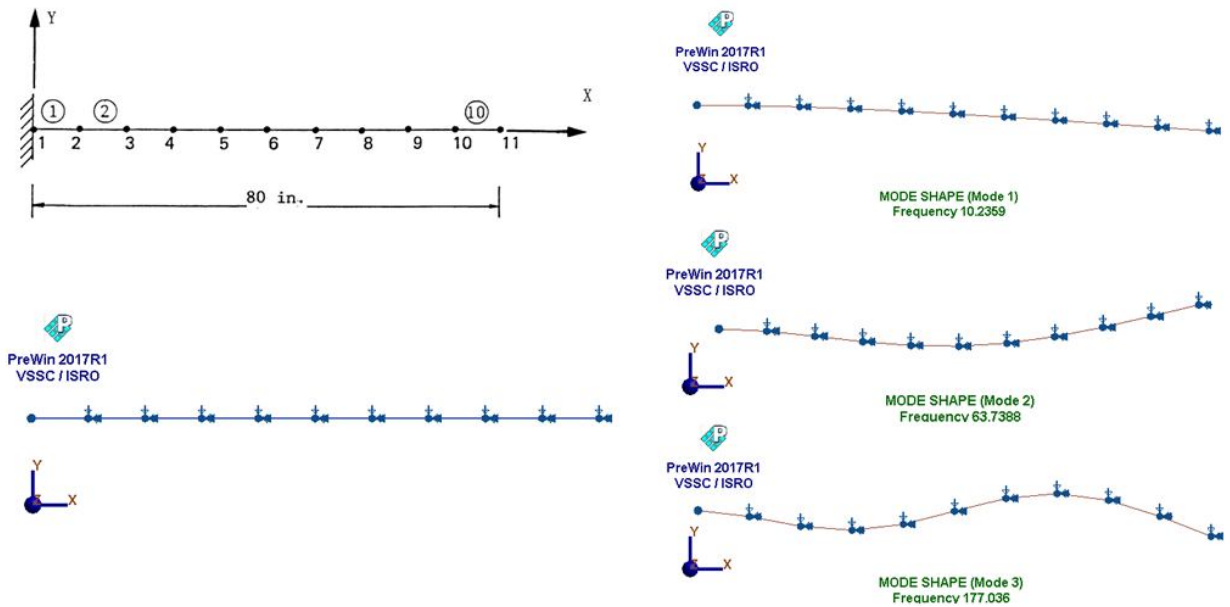


Natural frequencies of a cantilever beam



- Boundary condition** : All 6 degrees of freedom are arrested at cantilever beam, $U_x, U_z, R_x, R_y = 0$ at all nodes
- Material property** : $E = 30.0 \times 10^6 \text{ psi}$, $\nu = 0.3$, $\rho = 7.28 \times 10^{-4} \text{ lb-sec}^2/\text{in}^4$
- Beam cross section** : $A = 4 \text{ in}^2$, $I_{YY} = 1.3333 \text{ in}^4$, $I_{ZZ} = 1.3333 \text{ in}^4$
- Geometric property** : $L = 80 \text{ in}$
- Element type** : 3-D beam element
- Finite element statistics** :

Number of elements	Number of nodes	Degrees of freedom
10	12	20

Mode	Theoretical	FEAST ^{SMT}	NISA2 [®]
1	10.25	10.24	10.25
2	64.22	63.74	64.17
3	179.83	177.04	179.50