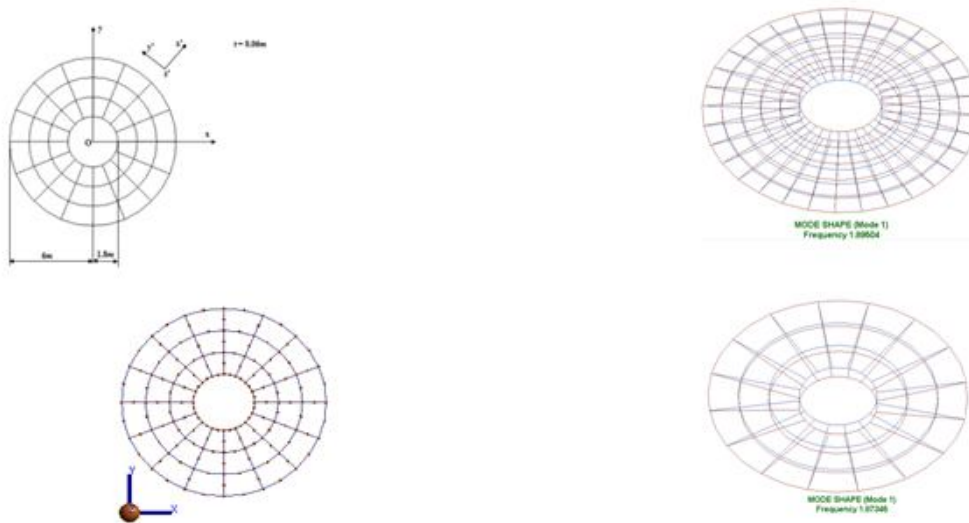


Free vibration analysis of simply supported thin annular plate



Boundary condition: $U_x = U_y = R_z = 0$ at all nodes, $U_z = 0$ around the circumference

Material property : $E=200 \text{ GPa}$, $\nu = 0.3$, Specific gravity = 8

Element type: Thin shell element, thickness = 0.06 m

Mesh type : 4 Node: 5 x 32

8 Node: 3 x 16

Finite element statistics :

| Number of elements | Number of nodes | Degrees of freedom |
|--------------------|-----------------|--------------------|
| 48 | 177 | 496 |

| Mode | 4 Node | | | 8 Node | | |
|------|--------|----------------------|----------------------|--------|----------------------|----------------------|
| | NAFEMS | FEAST ^{SMT} | NASTRAN [®] | NAFEMS | FEAST ^{SMT} | NASTRAN [®] |
| 1 | 1.89 | 1.89 | 1.85 | 1.87 | 1.87 | 1.86 |
| 2 | 5.22 | 5.24 | 5.16 | 5.14 | 5.10 | 5.09 |
| 3 | 5.22 | 5.24 | 5.16 | 5.14 | 5.10 | 5.09 |
| 4 | 10.06 | 10.03 | 9.61 | 9.68 | 9.65 | 9.63 |
| 5 | 10.06 | 10.06 | 9.65 | 9.68 | 9.69 | 9.67 |
| 6 | 15.77 | 15.71 | 13.94 | 14.80 | 14.88 | 14.55 |
| 7 | 16.49 | 16.43 | 15.24 | 15.51 | 15.66 | 15.50 |
| 8 | 16.49 | 16.43 | 15.24 | 15.51 | 15.66 | 15.50 |
| 9 | 19.28 | 19.37 | 17.38 | 18.31 | 18.16 | 17.77 |