# Dynamic of Structure: Mode and Time Period

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$$NumberOfStoreys = 5 \tag{1}$$

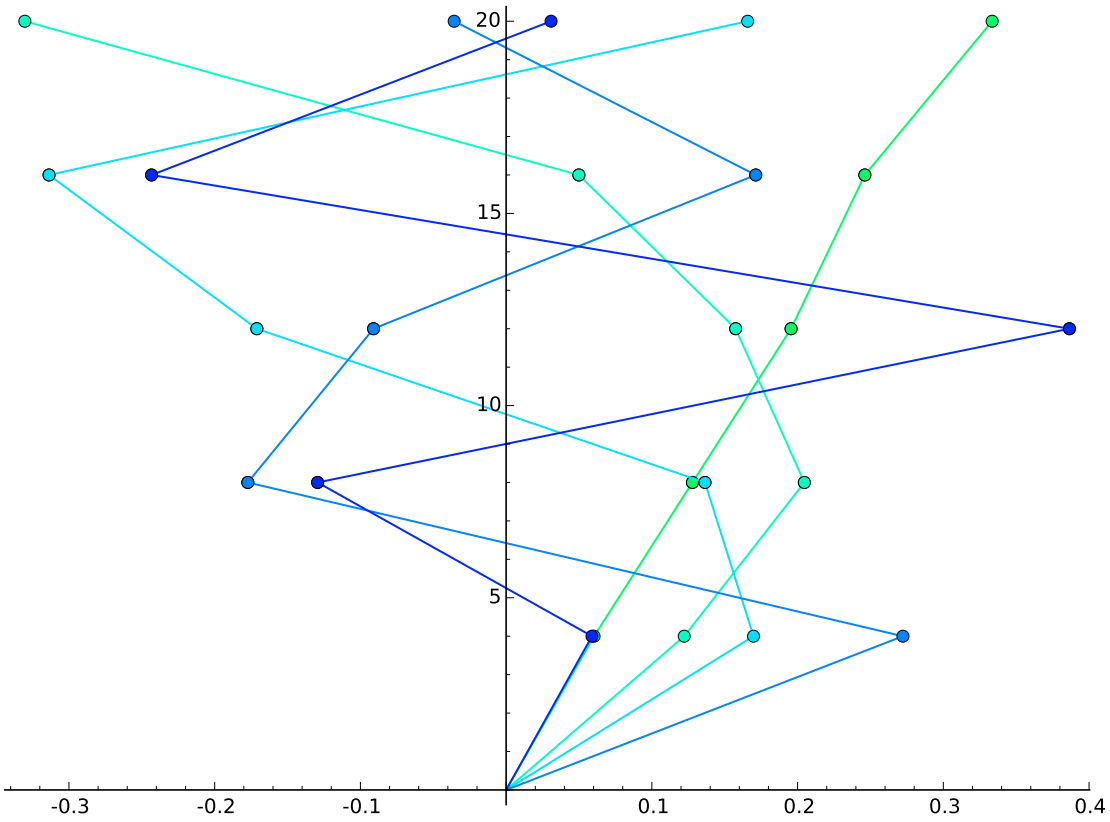
$$StiffnessMatrix = \begin{bmatrix} 1800 & -800 & 0 & 0 & 0 \\ -800 & 1400 & -600 & 0 & 0 \\ 0 & -600 & 1200 & -600 & 0 \\ 0 & 0 & -600 & 800 & -200 \\ 0 & 0 & 0 & -200 & 200 \end{bmatrix} \tag{2}$$

$$Mass = \begin{bmatrix} 8 & 0 & 0 & 0 & 0 \\ 0 & 8 & 0 & 0 & 0 \\ 0 & 0 & 4 & 0 & 0 \\ 0 & 0 & 0 & 4 & 0 \\ 0 & 0 & 0 & 0 & 4 \end{bmatrix} \tag{3}$$

$$OmegaSquare = \begin{bmatrix} 13.0979 & 57.5568 & 144.616 & 290.104 & 444.625 \end{bmatrix} \tag{4}$$

$$TimePeriod = \begin{bmatrix} 1.736 & 0.0000 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.8282 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.5225 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.0000 & 0.3689 & 0.0000 \\ 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.2980 \end{bmatrix} \tag{5}$$

$$Frequency = [3.619, 7.587, 12.03, 17.03, 21.09] \tag{6}$$




$$LevelFloor = \begin{bmatrix} 4.000 & 8.000 & 12.00 & 16.00 & 20.00 \end{bmatrix} \tag{7}$$

$$ModalParticipationFactor = \begin{bmatrix} 4.606 & 2.123 & 1.174 & 0.9385 & 0.1325 \end{bmatrix} \tag{8}$$

$$ModalMass = \begin{bmatrix} 21.21 & 4.509 & 1.378 & 0.8809 & 0.01755 \end{bmatrix} \tag{9}$$

$$ModalContribution = \begin{bmatrix} 75.77 & 16.10 & 4.921 & 3.146 & 0.06269 \end{bmatrix} \tag{10}$$

$$SaByG = \begin{bmatrix} 0.0000 & 0.5760 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 1.207 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 1.914 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 2.500 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 2.500 & 0.0000 & 0.0000 & 0.0000 \end{bmatrix} \tag{11}$$

$$AH = \begin{bmatrix} 0.0000 & 0.01382 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.02898 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.04593 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.06000 & 0.0000 & 0.0000 & 0.0000 \\ 0.0000 & 0.06000 & 0.0000 & 0.0000 & 0.0000 \end{bmatrix} \tag{12}$$

$$DesignLateralforce = \begin{bmatrix} 0.3015 & 0.5902 & 0.7184 & 1.203 & 0.03675 \\ 0.6388 & 0.9882 & 0.5775 & -0.7834 & -0.08071 \\ 0.4885 & 0.3803 & -0.3619 & -0.2011 & 0.1206 \\ 0.6150 & 0.1205 & -0.6637 & 0.3784 & -0.07590 \\ 0.8333 & -0.7975 & 0.3507 & -0.07881 & 0.009617 \end{bmatrix} \tag{13}$$

$$PeakShearForce = \begin{bmatrix} 2.877 & 1.282 & 0.6209 & 0.5185 & 0.01033 \\ 2.576 & 0.6915 & -0.09744 & -0.6848 & -0.02642 \\ 1.937 & -0.2967 & -0.6749 & 0.09858 & 0.05429 \\ 1.448 & -0.6769 & -0.3129 & 0.2996 & -0.06628 \\ 0.8333 & -0.7975 & 0.3507 & -0.07881 & 0.009617 \end{bmatrix} \tag{14}$$

ABS-:

$$StoreyShearForce = \begin{bmatrix} 5.298 \\ 4.049 \\ 3.007 \\ 2.738 \\ 2.060 \end{bmatrix} \tag{15}$$

SRSS -:

$$StoreyShearForce = \begin{bmatrix} 3.252 \\ 2.755 \\ 2.075 \\ 1.656 \\ 1.208 \end{bmatrix} \tag{16}$$

Complete Quadratic combination -:

$$LateralForce = (1.414,\ 0.4620,\ 0.2159,\ 0.1661,\ 0.01100) \tag{17}$$

Maximum Absolute Response -:

$$Force = (0.9520,\ 0.2461,\ 0.04982,\ 0.1551,\ 0.01100) \tag{18}$$