Detected Resonant Frequencies (0-200 Hz):
16
122
146

Estimated Damping Ratios:
Mode near 16.00 Hz → ζ = 0.1250
Mode near 122.00 Hz → ζ = 0.0246
Mode near 146.00 Hz → ζ = 0.0274

Normalized Mode Shapes (0-200 Hz):

Mode at 16.00 Hz:
X: 0.107∠-14.1°
Y: 0.088∠-174.7°
Z: 1.000∠-12.6°

Mode at 122.00 Hz:
X: 0.820∠78.5°
Y: 1.000∠75.5°
Z: 0.737∠-99.6°

Mode at 146.00 Hz:
X: 0.201∠-46.9°
Y: 1.000∠-64.5°
Z: 0.203∠132.6°
=== Modal Parameter Summary (0-200 Hz) ===

Freq_Hz	Damping	Phi_X	Phi_Y	Phi_Z
16	0.125	0.10408-0.026202i	-0.087255-0.0080976i	0.97585-0.21845i
122	0.02459	0.16305+0.80337i	0.25063+0.96808i	-0.12274-0.72636i
146	0.027397	0.13748-0.1468i	0.43076-0.90247i	-0.13744+0.14927i

Detected Resonant Frequencies (0-200 Hz):
16
122

146

Estimated Damping Ratios:
0.1250
0.0246
0.0274

=== Modal Summary (0-200 Hz) ===
Mode 1: f=16.00 Hz, Damping=0.1250, k_dyn_X=2606616.51 N/m, k_dyn_Y=3192544.29 N/m, k_dyn_Z=279763.12 N/m
Mode Shape (X,Y,Z): 0.107∠-14.1°, 0.088∠-174.7°, 1.000∠-12.6°
Mode 2: f=122.00 Hz, Damping=0.0246, k_dyn_X=27109268.29 N/m, k_dyn_Y=22222733.87 N/m, k_dyn_Z=30167136.34 N/m
Mode Shape (X,Y,Z): 0.820∠78.5°, 1.000∠75.5°, 0.737∠-99.6°
Mode 3: f=146.00 Hz, Damping=0.0274, k_dyn_X=83178944.66 N/m, k_dyn_Y=16729422.96 N/m, k_dyn_Z=82447728.25 N/m
Mode Shape (X,Y,Z): 0.201∠-46.9°, 1.000∠-64.5°, 0.203∠132.6°