Detected Resonant Frequencies (0-200 Hz):
88
124
144

Estimated Damping Ratios:
Mode near 88.00 Hz → ζ = 0.0341
Mode near 124.00 Hz → ζ = 0.0484
Mode near 144.00 Hz → ζ = 0.0208

Normalized Mode Shapes (0-200 Hz):

Mode at 88.00 Hz:
X: 0.097∠-2.2°
Y: 1.000∠172.8°
Z: 0.185∠-169.7°

Mode at 124.00 Hz:
X: 0.078∠50.7°
Y: 0.579∠46.6°
Z: 1.000∠-130.3°

Mode at 144.00 Hz:
X: 0.163∠115.9°
Y: 1.000∠-50.9°
Z: 0.253∠-175.4°
=== Modal Parameter Summary (0-200 Hz) ===

Freq_Hz	Damping	Phi_X	Phi_Y	Phi_Z
88	0.034091	0.096714-0.0036926i	-0.99221+0.12458i	-0.18218-0.03315i
124	0.048387	0.049139+0.060141i	0.39798+0.42017i	-0.6468-0.76266i
144	0.020833	-0.071138+0.14626i	0.63058-0.77613i	-0.25236-0.020149i

Detected Resonant Frequencies (0-200 Hz):
88
124

144

Estimated Damping Ratios:
0.0341
0.0484
0.0208

=== Modal Summary (0-200 Hz) ===
Mode 1: f=88.00 Hz, Damping=0.0341, k_dyn_X=472362297.03 N/m, k_dyn_Y=45717317.96 N/m, k_dyn_Z=246894492.67 N/m
Mode Shape (X,Y,Z): 0.097∠-2.2°, 1.000∠172.8°, 0.185∠-169.7°
Mode 2: f=124.00 Hz, Damping=0.0484, k_dyn_X=158365461.39 N/m, k_dyn_Y=21251883.72 N/m, k_dyn_Z=12299172.02 N/m
Mode Shape (X,Y,Z): 0.078∠50.7°, 0.579∠46.6°, 1.000∠-130.3°
Mode 3: f=144.00 Hz, Damping=0.0208, k_dyn_X=95537318.90 N/m, k_dyn_Y=15538470.45 N/m, k_dyn_Z=61376880.00 N/m
Mode Shape (X,Y,Z): 0.163∠115.9°, 1.000∠-50.9°, 0.253∠-175.4°