Detected Resonant Frequencies (0-200 Hz):
  16
  122
  144

Estimated Damping Ratios:
  Mode near 16.00 Hz → ζ = 0.1250
  Mode near 122.00 Hz → ζ = 0.0328
  Mode near 144.00 Hz → ζ = 0.0208

Normalized Mode Shapes (0-200 Hz):

Mode at 16.00 Hz:
 X: 0.141∠-6.6°
 Y: 0.121∠-164.5°
 Z: 1.000∠-9.2°

Mode at 122.00 Hz:
 X: 0.304∠78.7°
 Y: 0.591∠79.1°
 Z: 1.000∠-100.0°

Mode at 144.00 Hz:
 X: 0.056∠61.2°
 Y: 1.000∠-51.6°
 Z: 0.248∠165.9°

=== Modal Parameter Summary (0-200 Hz) ===

Freq_Hz	Damping	Phi_X	Phi_Y	Phi_Z
16	0.125	0.13978-0.016121i	-0.11693-0.03246i	0.9871-0.16012i
122	0.032787	0.059374+0.29824i	0.11181+0.58036i	-0.17309-0.98491i
144	0.020833	0.026836+0.048859i	0.62085-0.78393i	-0.24029+0.060416i

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

Estimated Damping Ratios:
   0.1250
   0.0328
   0.0208

=== Modal Summary (0-200 Hz) ===
Mode 1: f=16.00 Hz, Damping=0.1250, k_dyn_X=2939280.91 N/m, k_dyn_Y=3408020.01 N/m, k_dyn_Z=413573.01 N/m
  Mode Shape (X,Y,Z): 0.141∠-6.6°, 0.121∠-164.5°, 1.000∠-9.2°
Mode 2: f=122.00 Hz, Damping=0.0328, k_dyn_X=41505205.02 N/m, k_dyn_Y=21355251.00 N/m, k_dyn_Z=12621578.92 N/m
  Mode Shape (X,Y,Z): 0.304∠78.7°, 0.591∠79.1°, 1.000∠-100.0°
Mode 3: f=144.00 Hz, Damping=0.0208, k_dyn_X=278110099.54 N/m, k_dyn_Y=15502975.61 N/m, k_dyn_Z=62570506.81 N/m
  Mode Shape (X,Y,Z): 0.056∠61.2°, 1.000∠-51.6°, 0.248∠165.9°