

STAGS 360-degree model

The unstiffened shell was optimized by GENOPT with Mode 1 & Mode 2 axisymmetric imperfections.

mode 2, pcr = 0.14910E+01

STAGS prediction of linear bifurcation buckling

linear buckling of unstiffened perfect shell, optimized with mode 1 & mode 2 imperfections

$\Theta_x$  -35.84

$\Theta_y$  -13.14

$\Theta_z$  35.63

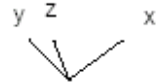


Fig. 77 Second linear bifurcation buckling mode of the optimized **unstiffened** equivalent ellipsoidal shell according to the STAGS program. This non-axisymmetric ( $n=1$  circumferential wave) mode is the first of a pair of modes with exactly the same eigenvalue. The second non-axisymmetric mode in the pair is the same as the above except that the buckling mode is oriented differently circumferentially. This STAGS linear bifurcation buckling mode is used as an initial imperfection shape with amplitude,  $W_{imp} = 0.2$  inch, to compute the nonlinear load-apex-deflection curve with x symbols plotted as the fifth trace in Fig. 94. **Shells of revolution with imperfections with this non-axisymmetric shape cannot be handled by BIGBOSOR4.** Therefore, GENOPT optimization occurs in the presence of only axisymmetric buckling modal imperfections.