



Fig. 103 **n = 1 circumferential wave** non-axisymmetric linear buckling mode shape from STAGS for the 4-mode-optimized design of the **unstiffened, imperfect** equivalent ellipsoidal shell listed in Table 65. The optimum design was obtained with BIGBOSOR4 with the use of plus and minus axisymmetric **mode 1, mode 2, mode 3, and mode 4** imperfection shapes with amplitude, $W_{imp} = 0.2$ inch. This STAGS buckling mode corresponds to eigenvalue no. 2. Compare with the non-axisymmetric imperfection shape displayed in Fig. 77 predicted by STAGS for the “2-mode” optimized unstiffened shell listed in Table 33 under the heading “unstiffened, imperfect”. This non-axisymmetric mode shape is used as an initial imperfection with amplitude, $W_{imp} = 0.2$ inch, in the nonlinear case that produces the second-to-last trace in Fig. 109. **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.