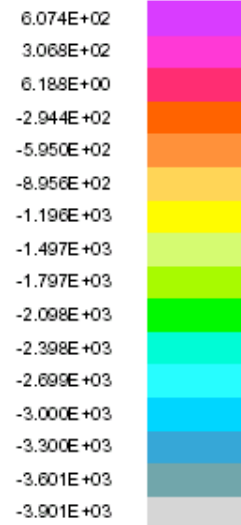
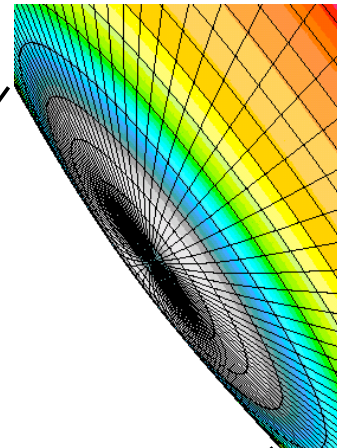
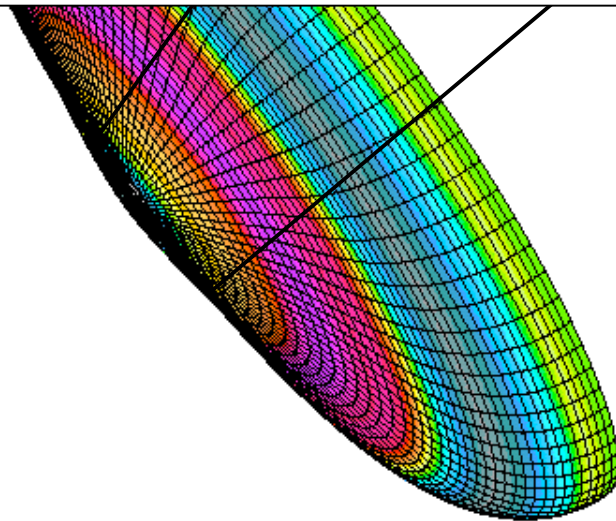


The absolute value of the maximum meridional stress in the isogrid “layer” in the STAGS model is  $32.2 \times 3901 = 125612$  psi, which significantly exceeds the absolute value of STFMXS in shell segment 1 in Table 42: STFMXS = 86190 psi. The discrepancy arises because the STAGS model treats the isogrid “layer” as an isotropic layer in which the isogrid is “smeared”, whereas in the BIGBOSOR4 model (Table 42) the extreme fiber meridional stress in the isogrid “layer” is computed for a single isogrid stiffener member oriented in the meridional coordinate direction. [See Eqs.(7-9)]. Therefore, at the pole the STAGS prediction for perfect agreement with the BIGBOSOR4 prediction would have to be  $[1/(1-\nu)] \times (86190) = 129285$  psi, in which  $\nu$ =Poisson ratio = 1/3 for an isogrid configuration. NOTE: The BIGBOSOR4 prediction, listed in Table 42 for the +mode 1 imperfection, only gives the maximum absolute value of the extreme fiber stress in each shell segment, not both the maximum **inner** fiber stress and maximum **outer** fiber stress.



STAGS 360-degree model

eqellipse.stiffened.opm4: meridional stress (psi) in isogrid "layer"

PA= 1.0: applied external pressure = PA x 460 = 460 psi

step 9, layer 1, sigma1 at inner fiber of the isogrid "layer"

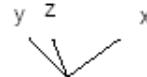
Equivalent isogrid-stiffened ellipsoidal shell with +mode 1 imperfection, Wimp=+0.2 inch

NOTE: Use a factor, 32.2, to get the maximum stress in isogrid member

⊖ x -35.84

⊖ y -13.14

⊖ z 35.63



8.112E+00

Fig. 20 STAGS prediction of the **inner fiber meridional stress sigma1 (psi) in the isogrid “layer”** of the optimized **+mode 1 imperfect isogrid-stiffened** equivalent ellipsoidal shell subjected to the external design pressure,  $p = 460$  psi. Compare with STFMXS in Table 42. Compare with the 10-degree “slice” model in Fig. 39.