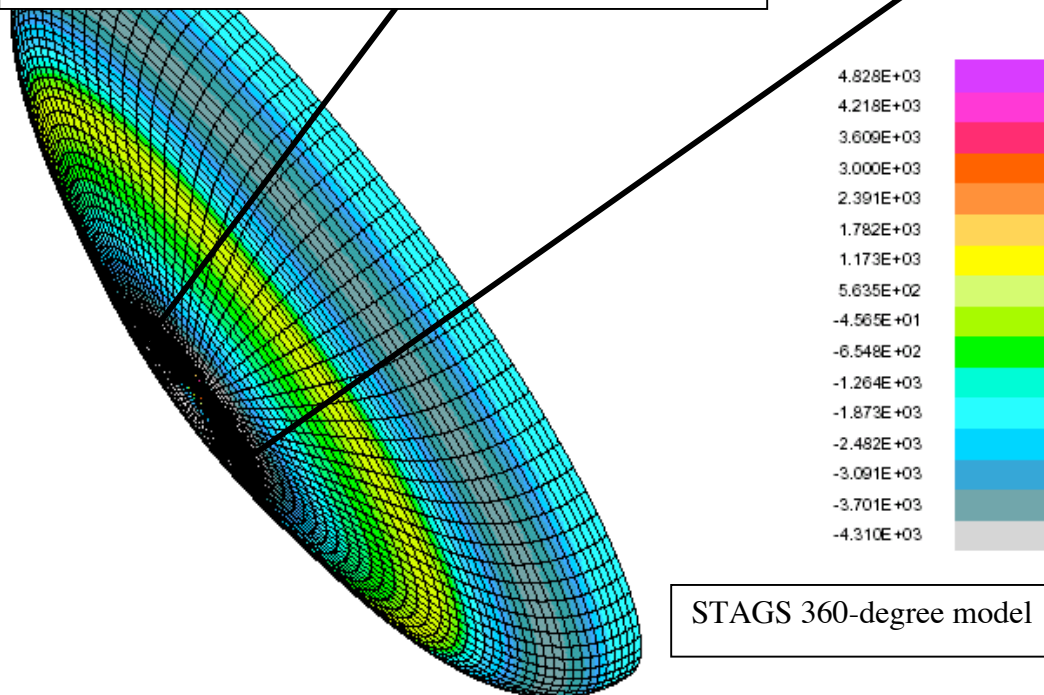


The maximum meridional stress at the pole in the isogrid “layer” in the STAGS model is  $32.2 \times 4828 = 155462$  psi, which significantly exceeds the value of STFMXS in shell segment 1 in Table 45: STFMXS = 122000 psi. The discrepancy arises partly because the STAGS model treats the isogrid “layer” as an isotropic layer in which the isogrid is “smeared”, whereas in the BIGBOSOR4 model (Table 45) 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)]. The same holds for the high stress near the pole,  $32.2 \times -4310 = -138782$  psi.



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 2 imperfection, Wimp=-0.2 inch

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

Θ x -35.84

Θ y -13.14

Θ z 35.63

8.110E+00

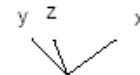


Fig. 32 STAGS prediction of the **inner fiber meridional stress sigma1 (psi) in the isogrid “layer”** of the optimized **–mode 2 imperfect isogrid-stiffened** equivalent ellipsoidal shell subjected to the external design pressure,  $p = 460$  psi. To obtain actual stress multiply the values in the key by 32.2 (isogrid spacing/thickness). Then compare with STFMXS in Table 45. Compare with the 10-degree “slice” model in Fig. 45.