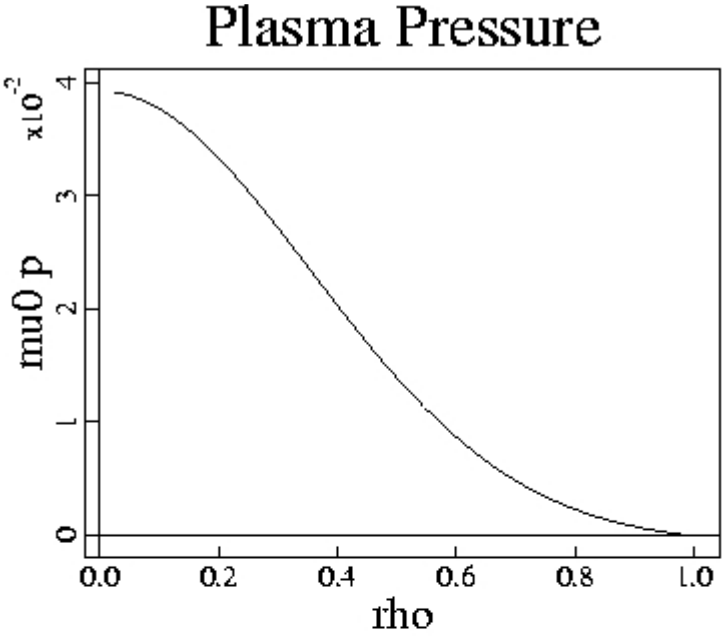
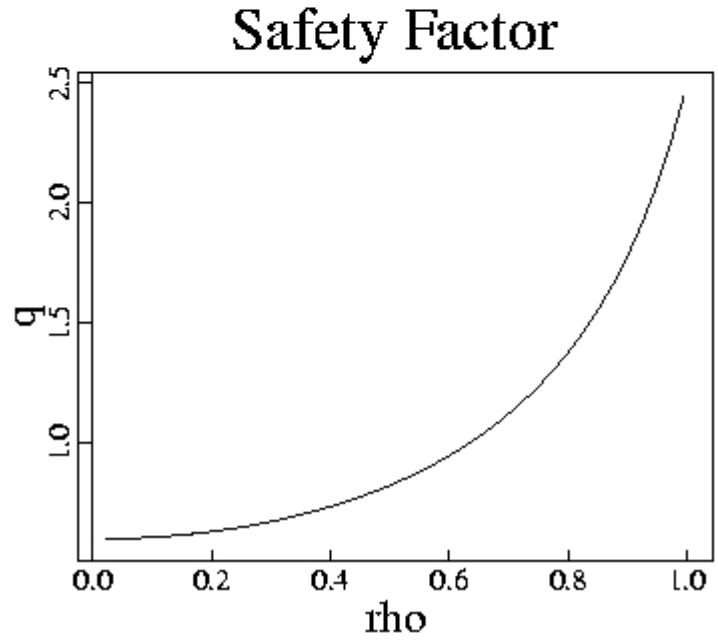
NIMROD RESULT ON IDEAL KINK BENCHMARK

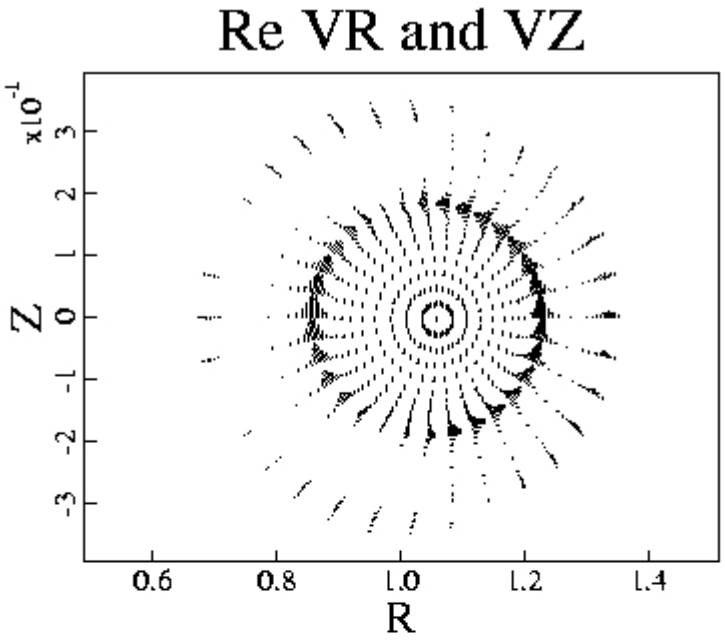
- Last meeting, $\gamma\tau_A = 3.8\times10^{-2}$ was reported--50% too high. $\tau_A\ (MARS) \equiv R_v^2\sqrt{\mu_0\rho}\,/F(a)$
- Checked normalizations and many numerical parameters--no change.
- Ming Chu ran the benchmark with GATO but had to create a TOQ equilibrium--agreed with M3D.
- TOQ equilibrium was then used with NIMROD:

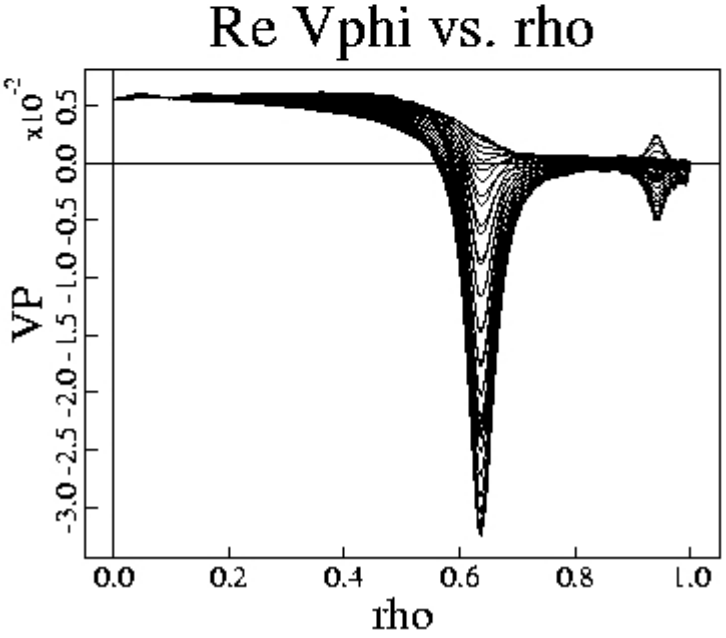
$\gamma\tau_A$	$\Delta t/\tau_A$	τ_v/τ_A	***mesh***
0.0251	0.500	10^7	32x32 quad
0.0252	0.250	10^7	32x32 quad
0.0252	0.125	10^7	32x32 quad
0.0251	0.500	10^8	32x32 quad
0.0252	0.500	10^8	48x32 cub

- Agrees with reported M3D result, $\gamma\tau_A = 2.58\times10^{-2}$, to within ~2%.
- Conclude that CHEASE equilibrium was of poor quality.


Plasma Pressure
mu0 p
x10^-2
0
1
2
3
4
0.0
0.2
0.4
0.6
0.8
1.0
rho


Safety Factor
q
1.0
1.5
2.0
2.5
0.0
0.2
0.4
0.6
0.8
1.0
rho


Re VR and VZ
x10^-1
3
2
1
0
-1
-2
-3
Z
0.6
0.8
1.0
1.2
1.4
R


Re Vphi vs. rho
x10^-2
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
VP
0.0
0.2
0.4
0.6
0.8
1.0
rho