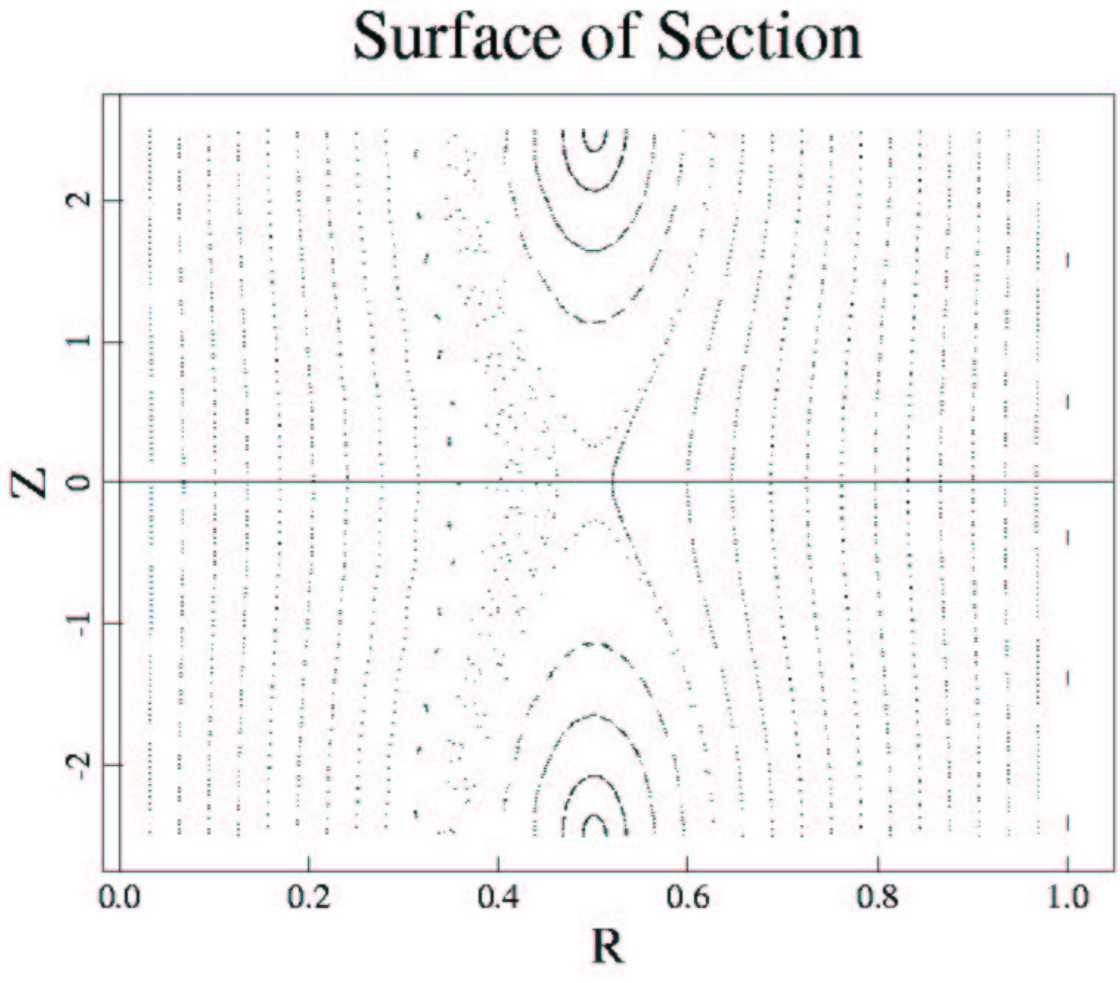
Progress on Parallel Electron Kinetic Closures in NIMROD

E. D. Held

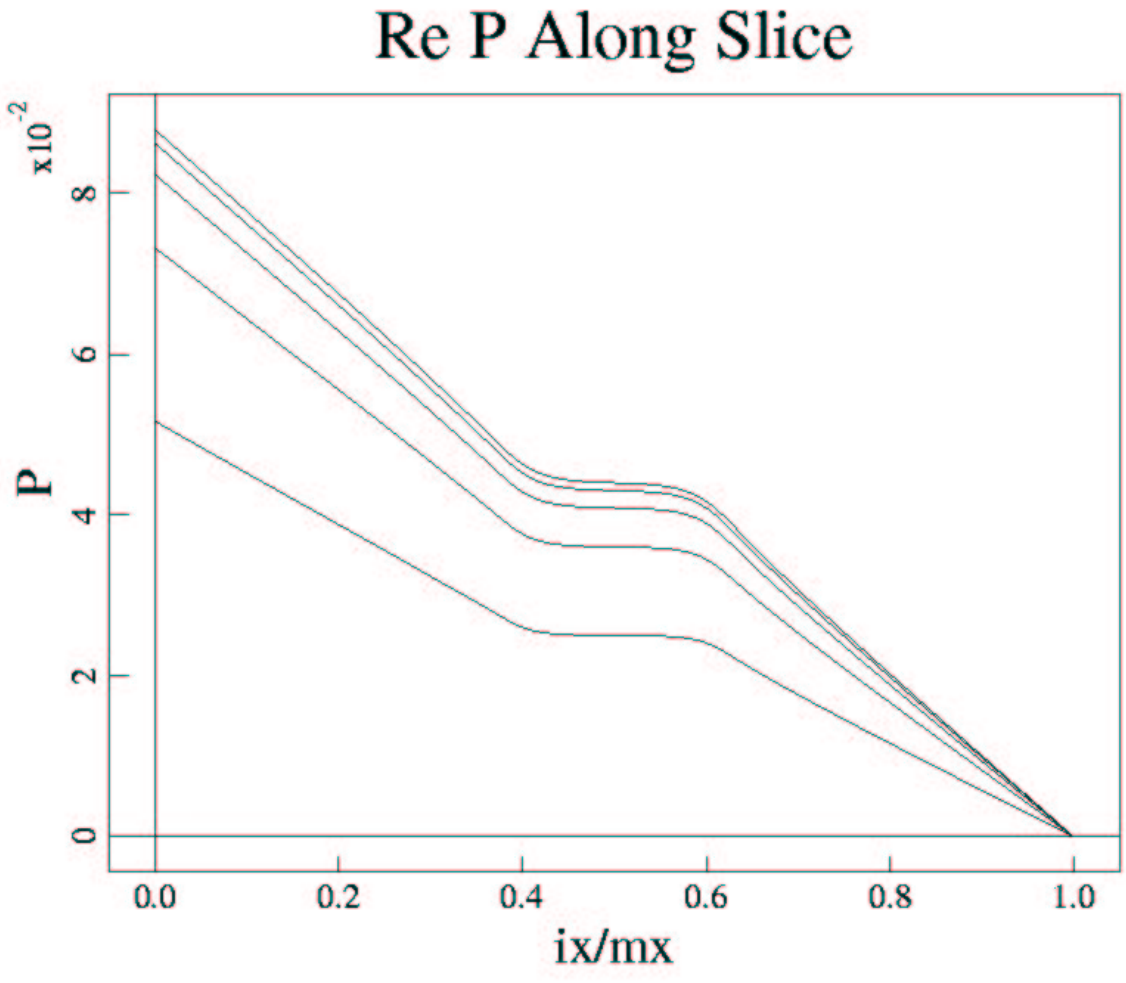
eheld@cc.usu.edu

Utah State University

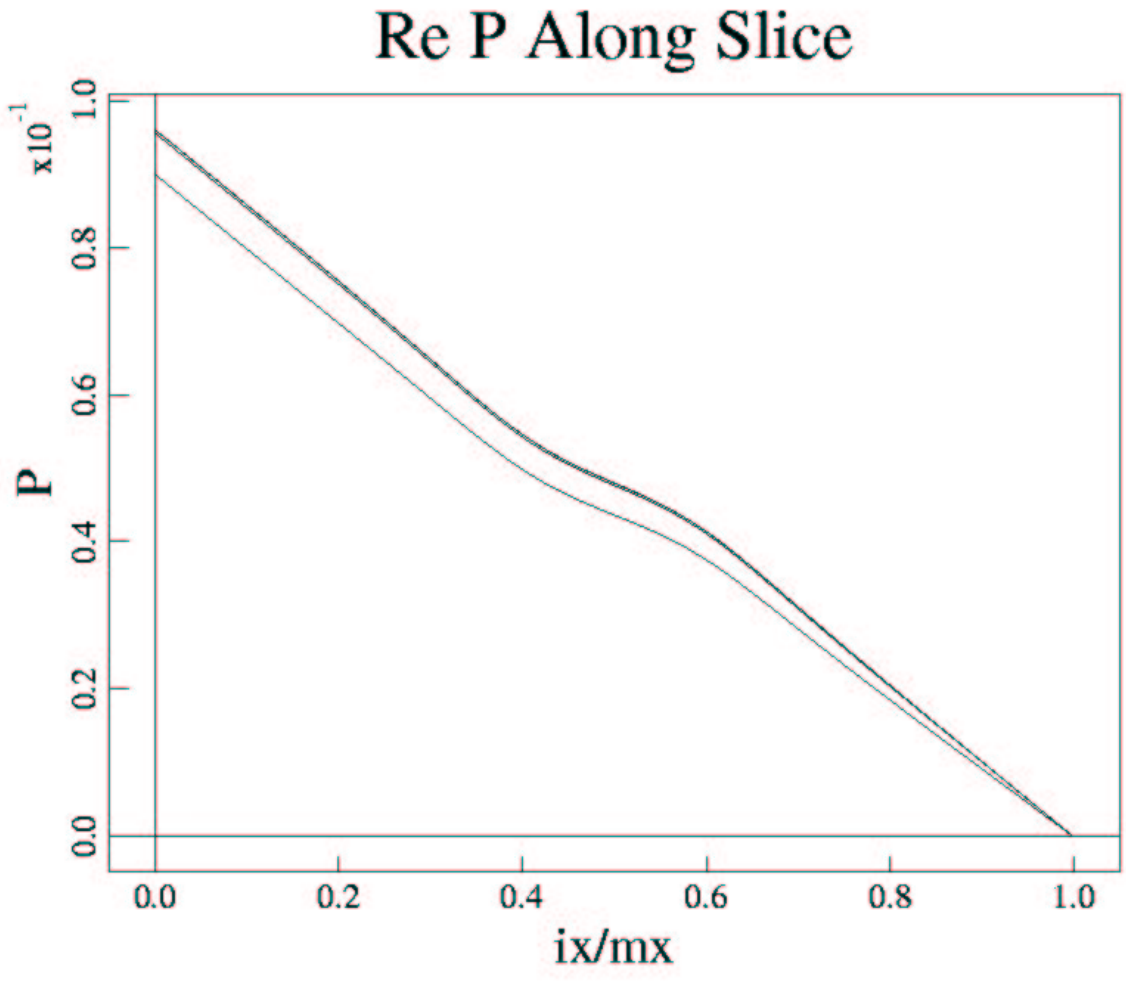
Slab test case with secondary island



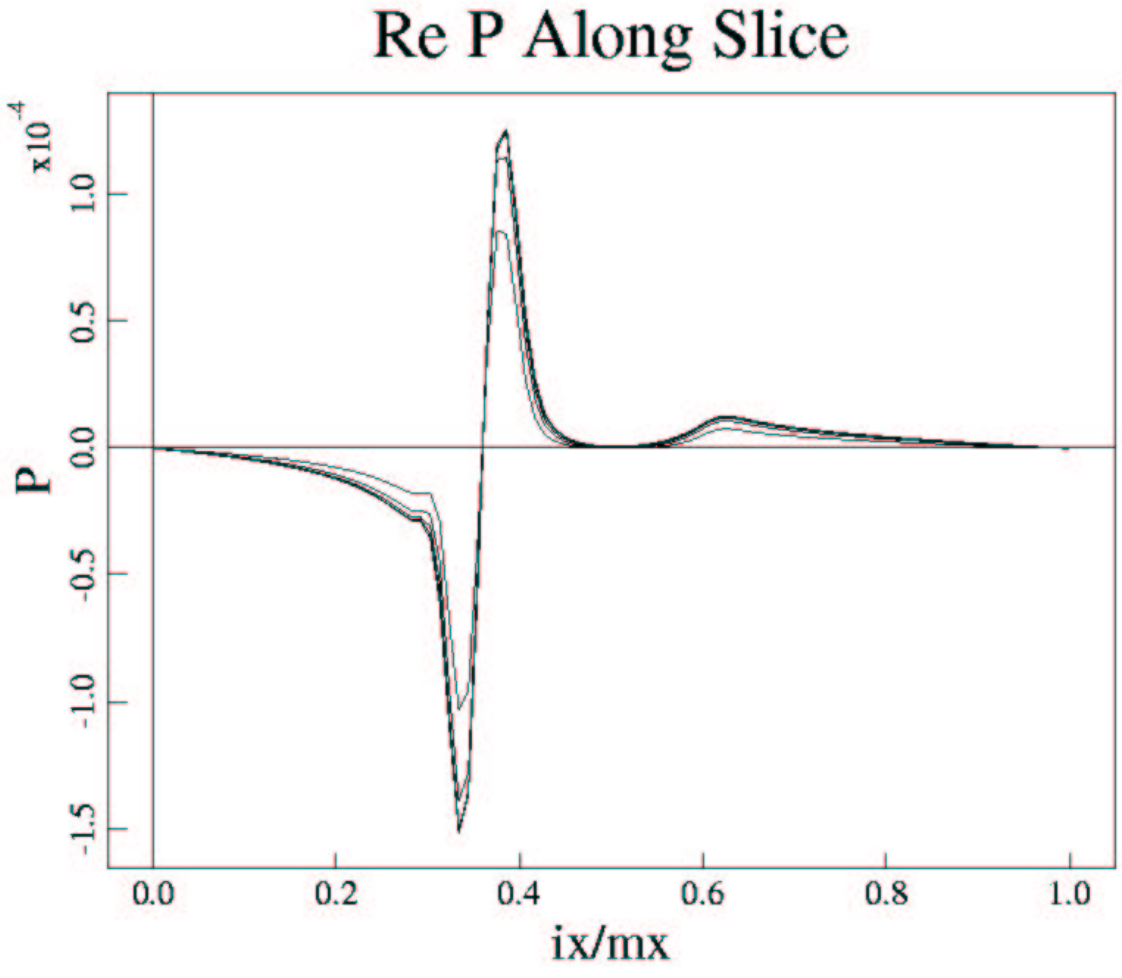
CEL evolution of n=0 with $T_e = 100$ *eV*



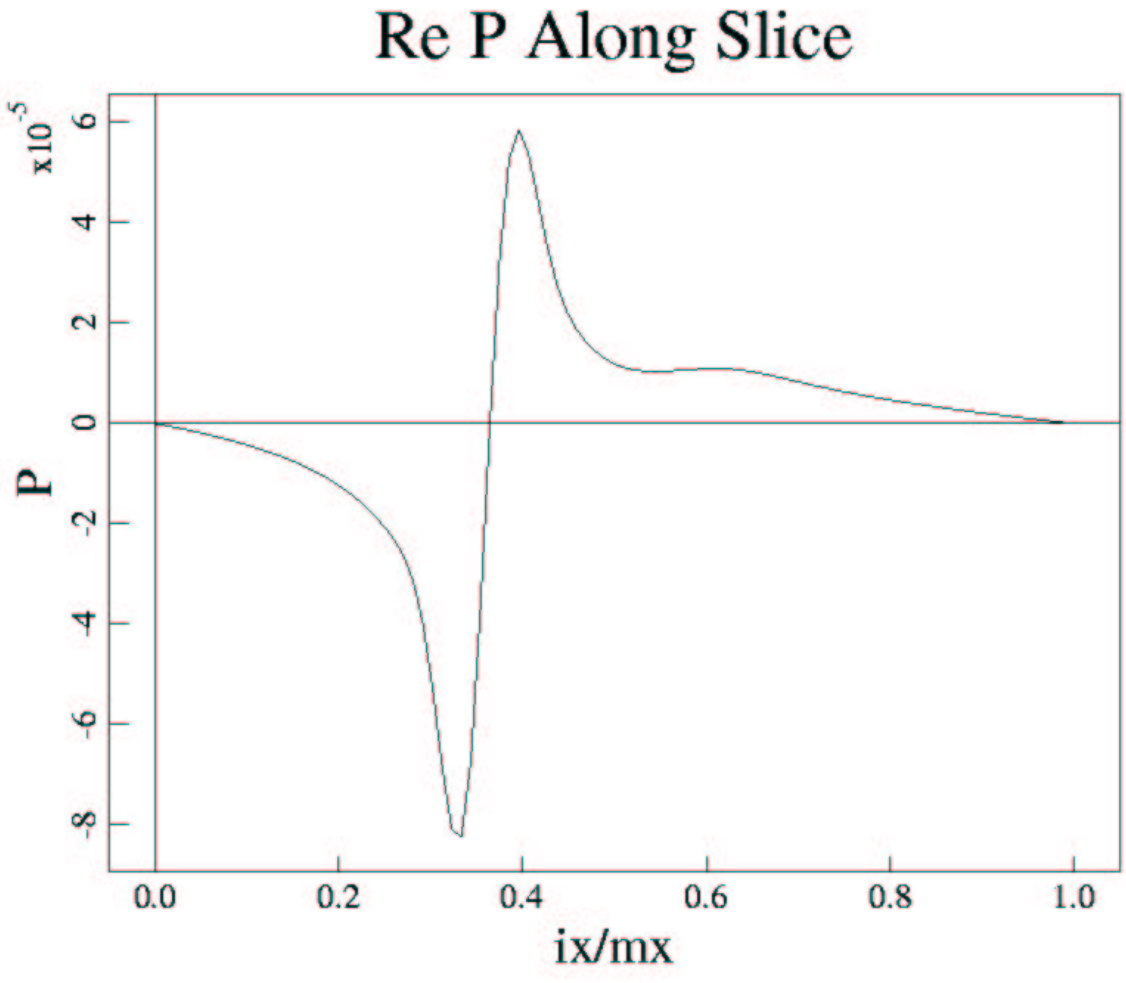
Diffusive evolution of n=0 with $\kappa_{\|} = 6 \times 10^6$



CEL evolution of n=1 with $T_e = 100$ *eV*

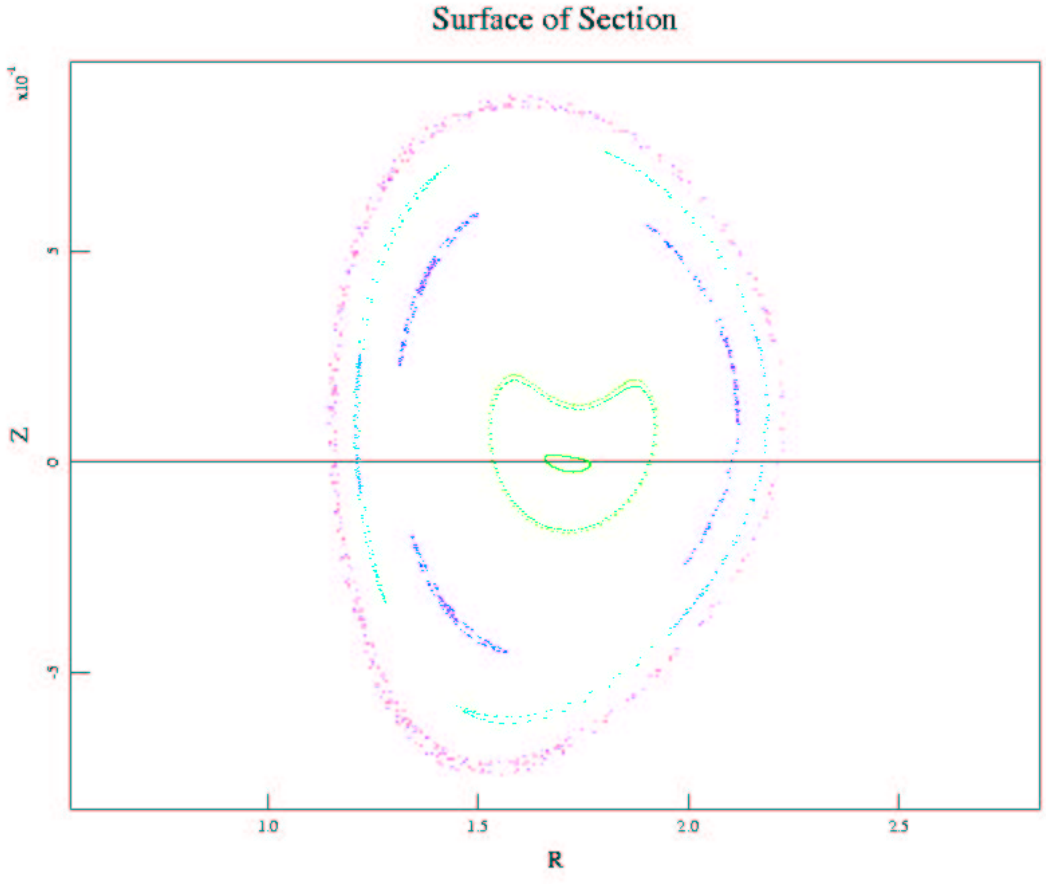


Diffusive evolution of n=1 with $\kappa_{||} = 6 \times 10^6$



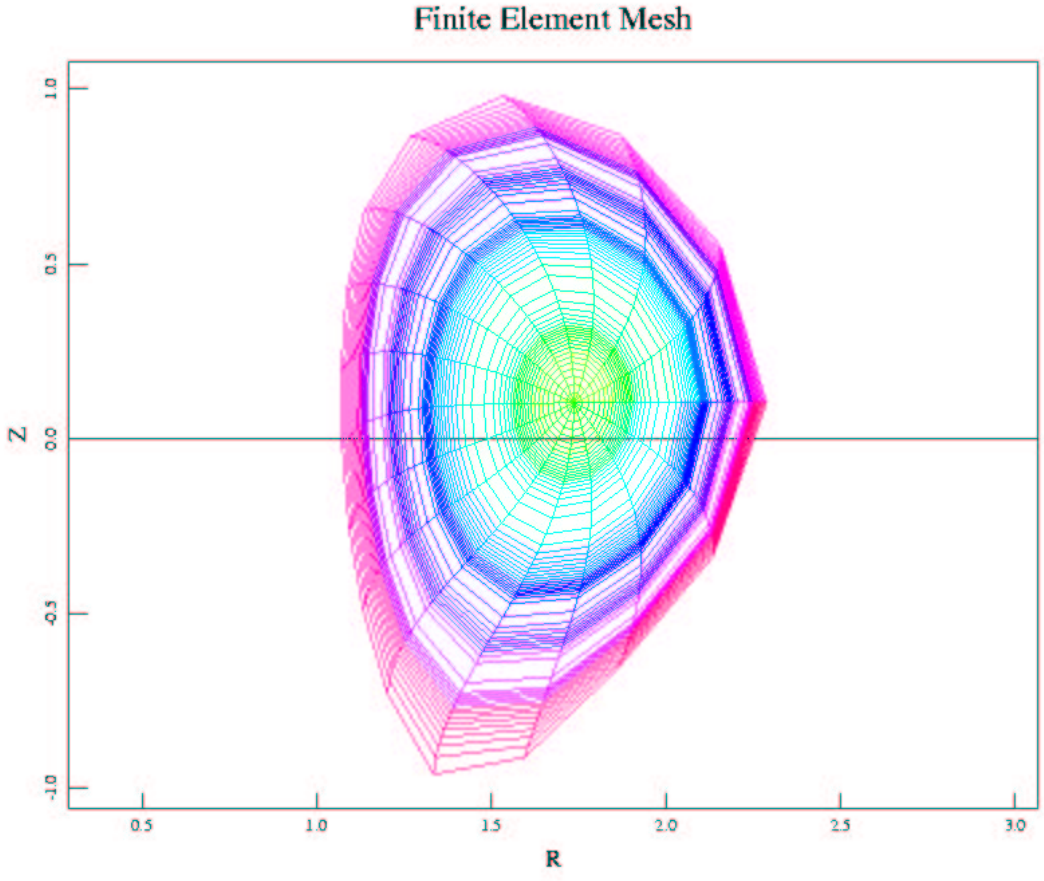
Restart of NTM case 86144 with $S = 10^7$

- Restart simulation when energy in 3/2 mode is greatest.



Use 64 X 16 grid with 16 nodes on SP3

- Turn on kinetic, parallel “electron" heat flow calculation with $T_e = 0.1$ keV and 1.0 keV.



Current status of NTM with parallel electron heat flow

- Cut timestep to 10^{-7} and set tol $= 10^{-10}$.
- Stable evolution through 5 steps.
- With 64 processors, heat flow calculation requires 80 % of compute time.
- Continuing run and will eventually increase dt.
- Setup and debugging process has used 30,000 hours on SP3.