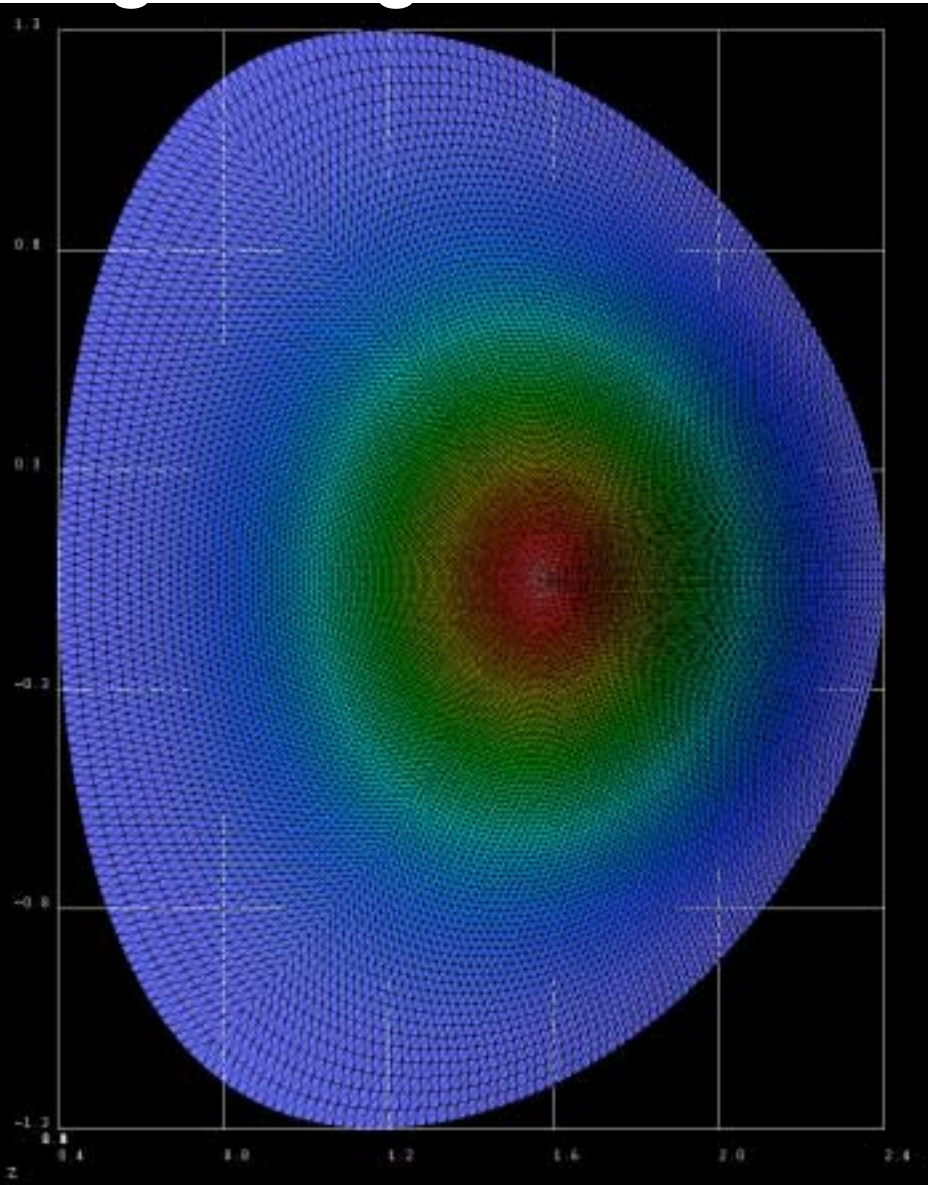
Initial CDX Study

- Equilibrium read from file eqdsk.cdf.
  - Only field & pressure profiles; not ρ.
  - Constant $\eta = 10^{-4}$, $\mu = 10^{-4}$.
- Resistive MHD physics model.
- Converged linear study followed by nonlinear run.
- 99 radial zones $\times$ 3 poloidal sections $\times$ 30 toroidal planes = 436,620 vertices (864,360 finite elements) on 15 processors.

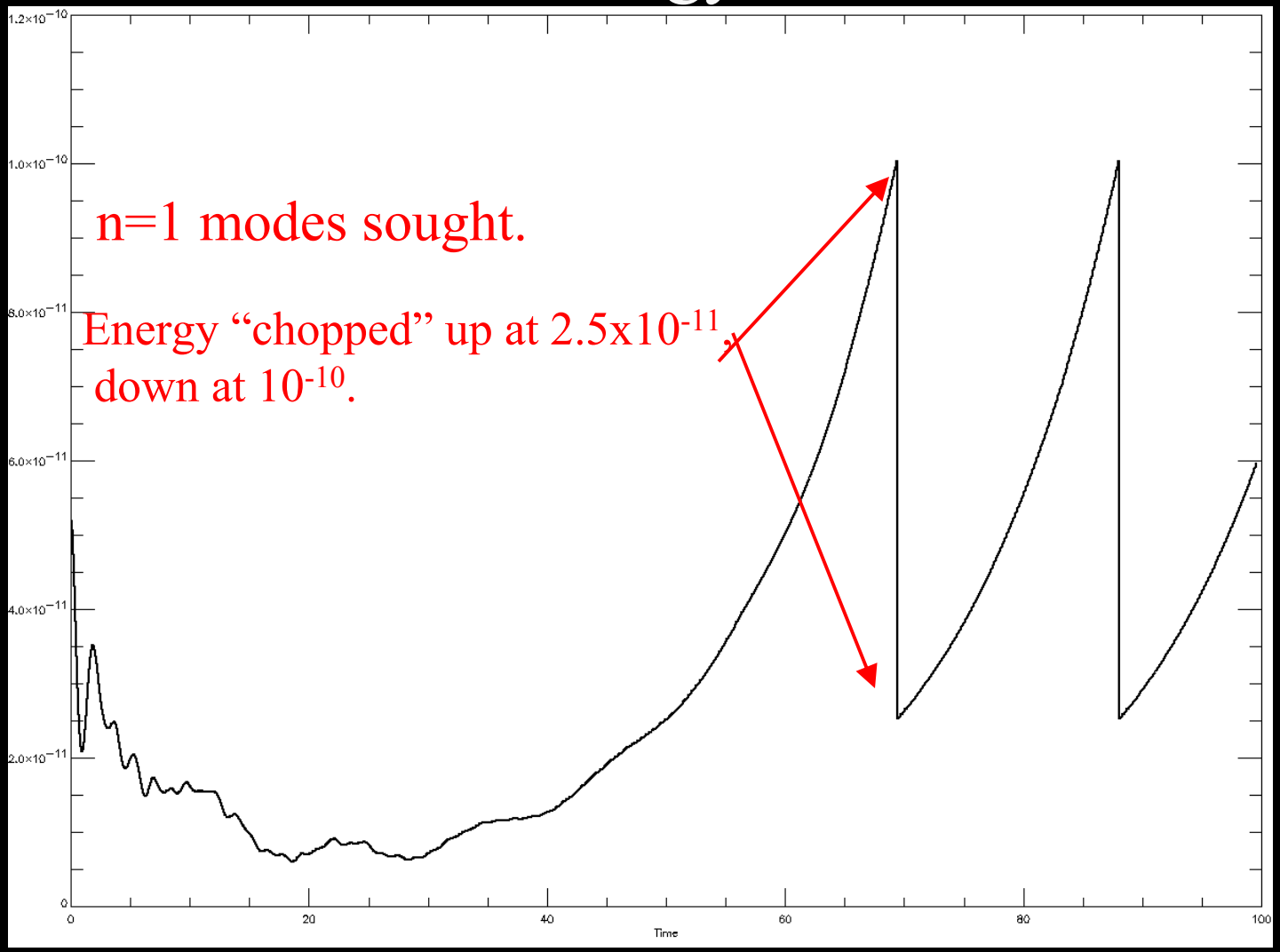
Radial Packing is Highest in Center

Initial pressure profile:



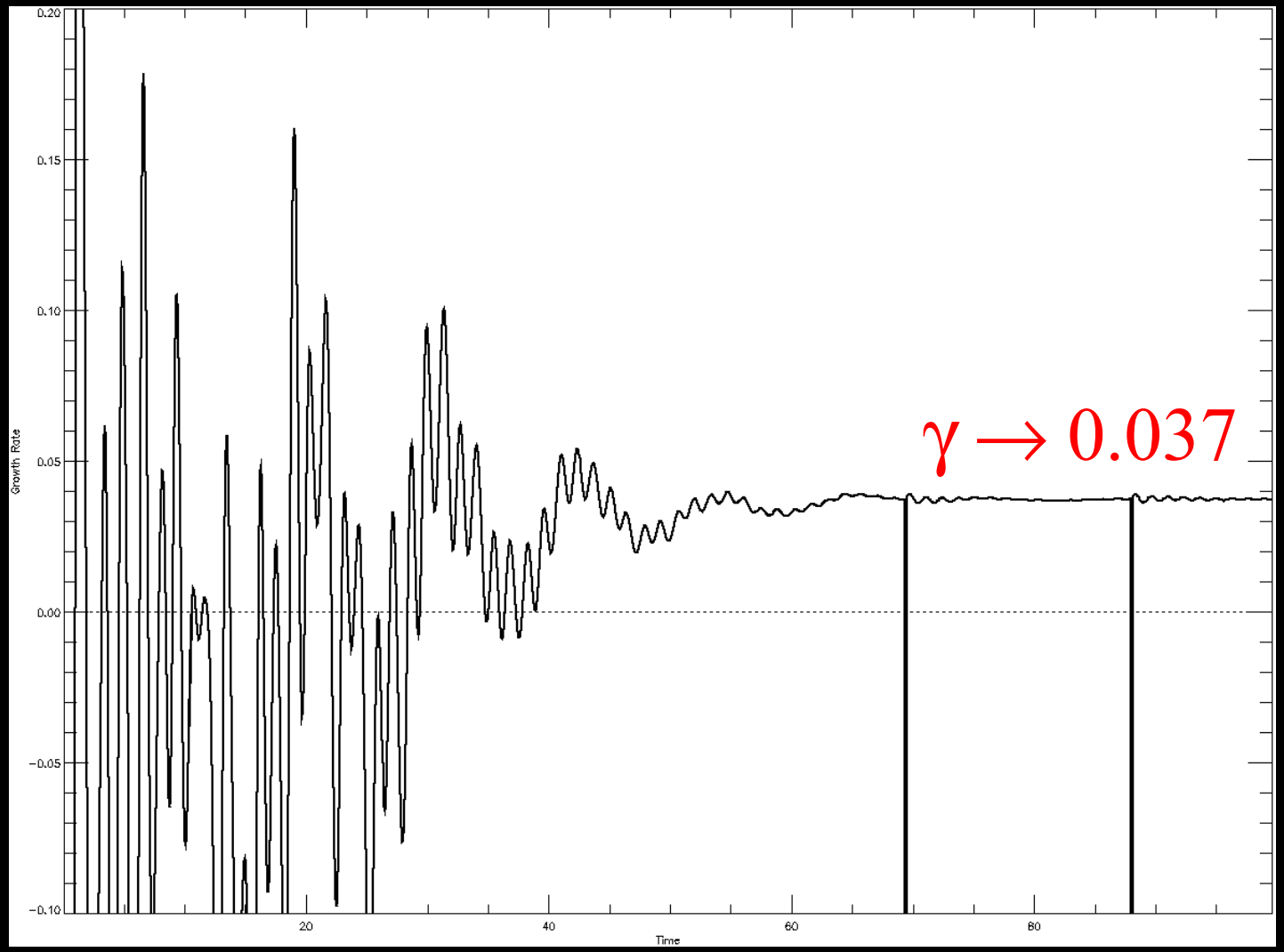
Initial CDX Study: Linear Phase

Kinetic Energy Evolution



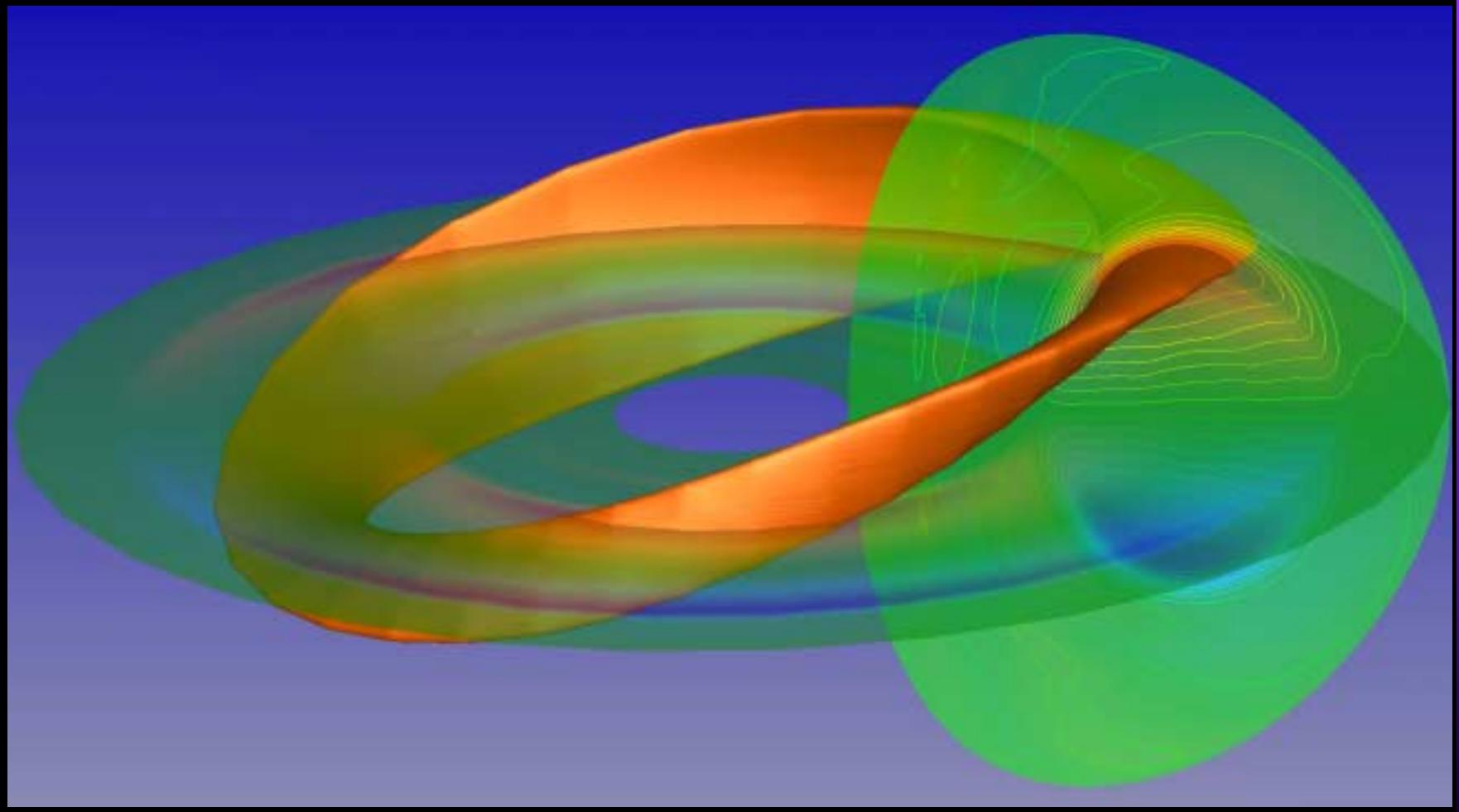
Initial CDX Study: Linear Phase

Growth Rate Evolution



Mode Has 1,1 Structure

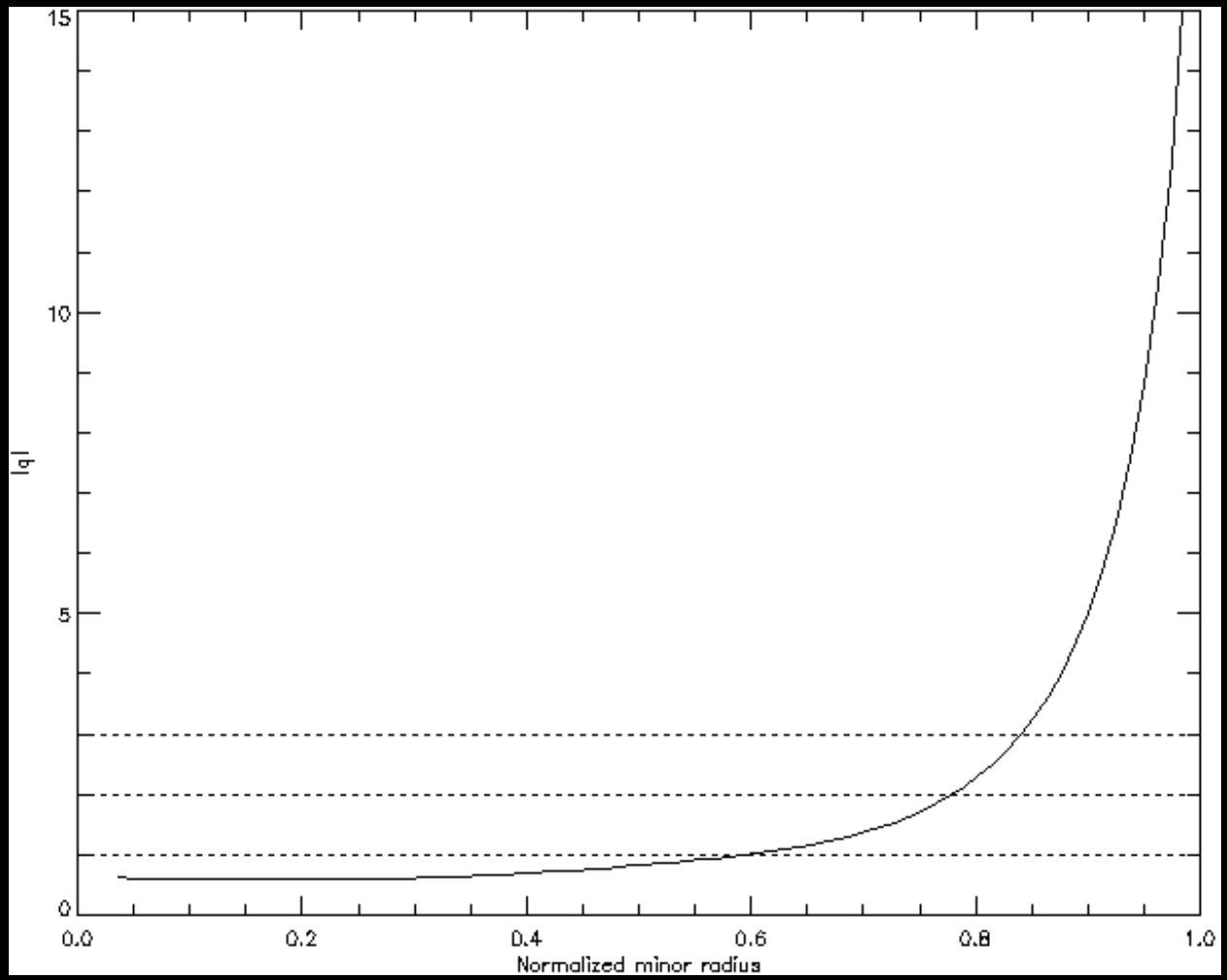
Isosurface and contours of approximate velocity stream function U:



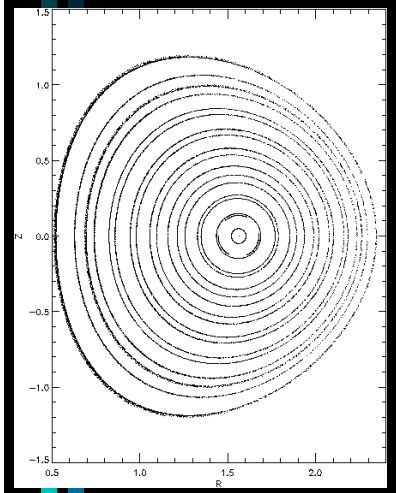
t = 99.58

Initial CDX Study: *q* profile

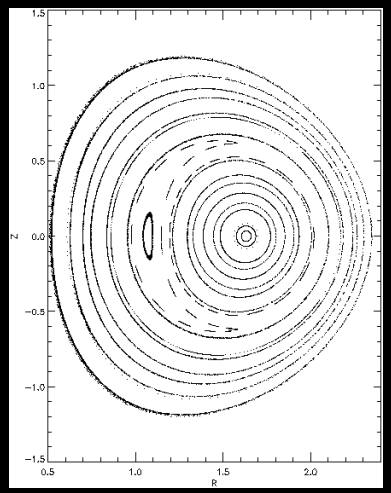
t=99.58, before chopping



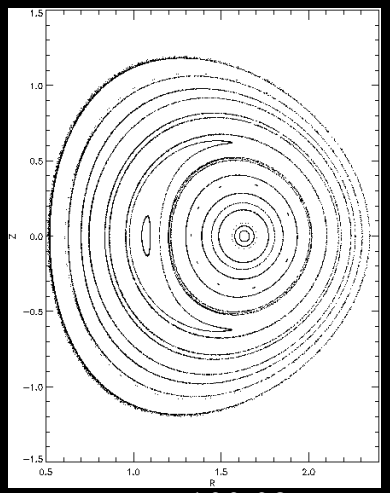
Initial CDX Study: Nonlinear Phase



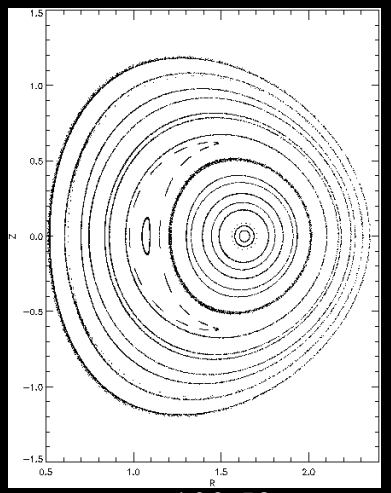
t=99.58



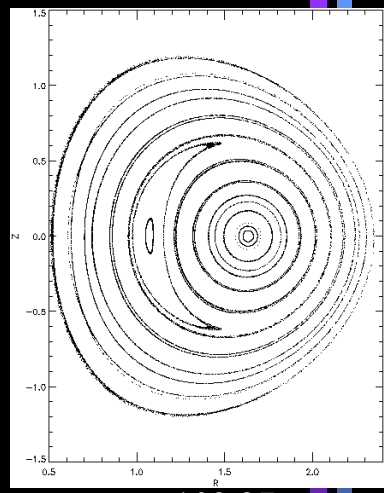
t=99.58,
chopped up x450



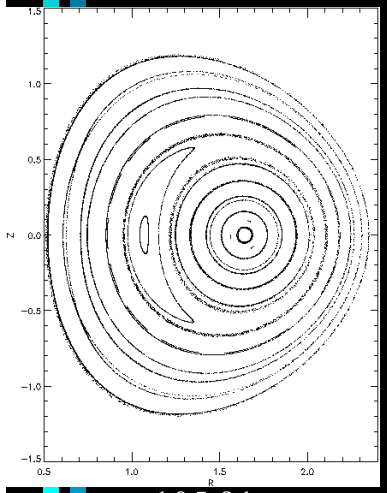
t=100.09



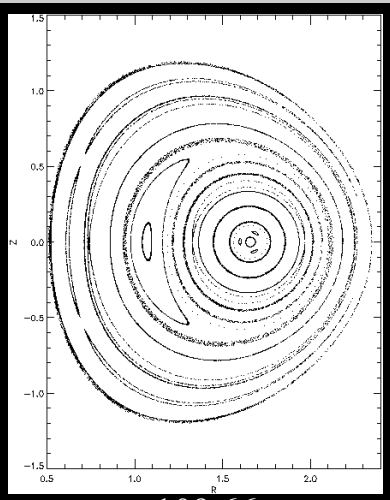
t=100.59



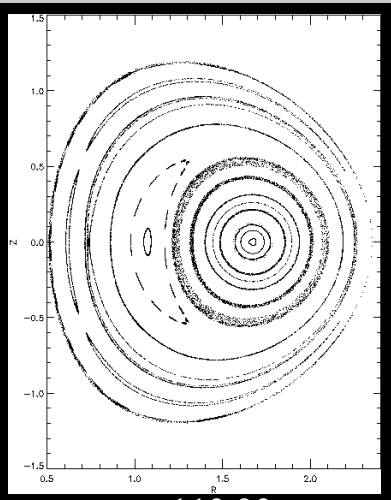
t=103.27



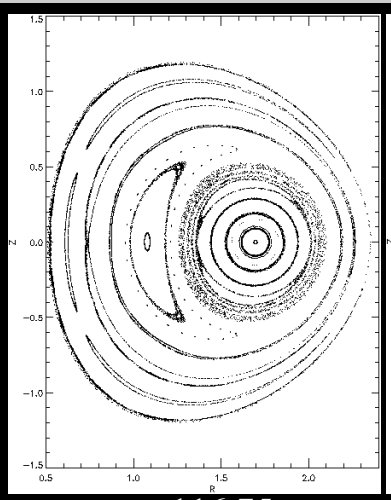
t=105.91



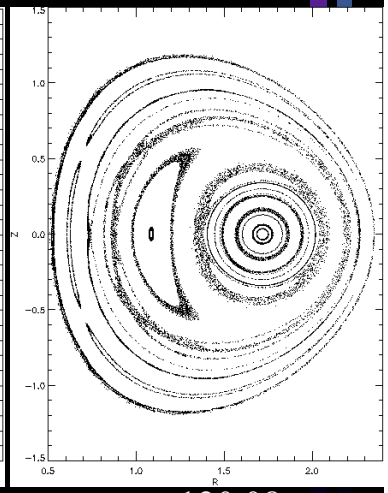
t=109.66



t=113.33



t=116.75

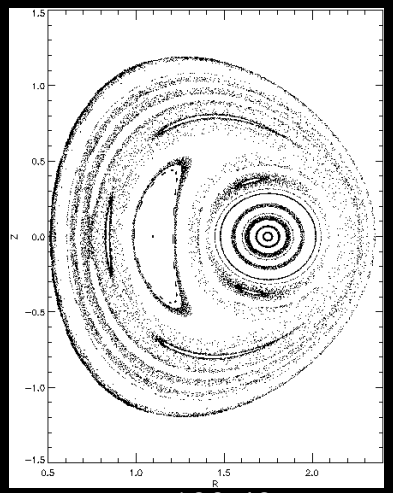


t=120.08

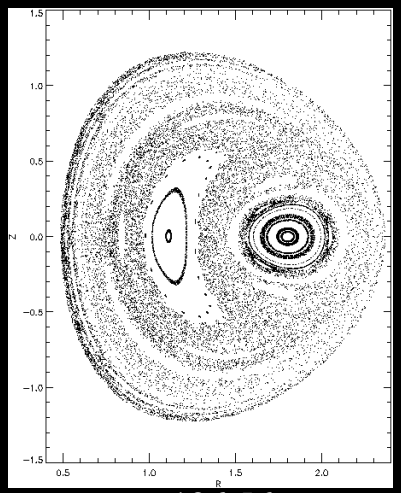
Linear $\gamma=0.037 \rightarrow \tau \approx 27$

$\eta=10^{-4}$; $\mu=10^{-4}$

Initial CDX Study, Nonlinear Phase



t=123.42



t=126.56

Linear $\gamma=0.037 \rightarrow \tau\approx27$

$\eta=10^{-4}$; $\mu=10^{-4}$