5/17/12

local sheer

$$A(r) = \frac{r}{2}\frac{d\Omega}{dr}$$

local vorticity

$$B(r) = \Omega(r) + A(r)$$
$$= \Omega(r) + \frac{r}{2}\frac{d\Omega}{dr}$$

$$\kappa^2(r) = \frac{1}{r^3}\frac{d}{dr}\left[r^2\Omega(r)\right]^2 \stackrel{?}{=} 4B(r)\Omega(r)$$

$$4B(r)\cdot\Omega(r) = 4\Omega^2(r) + 2\Omega r\frac{d\Omega}{dr}$$

$$\frac{d}{dr}\left[r^4\Omega^2\right] = 4r^3\Omega^2 + r^4(2\Omega)\frac{d\Omega}{dr}$$

$$\frac{1}{r^3}\cdot\frac{d}{dr}\left[r^2\Omega(r)\right]^2 = 4\Omega^2 + 2r\Omega\frac{d\Omega}{dr}$$

$$\kappa^2(r) = \frac{1}{r^3}\frac{d}{dr}\left[r^2\Omega(r)\right]^2 = 4B(r)\Omega(r)$$

epicyclic frequency

how the heck is that derived?

Different types of resonances:

Lindblad ← in a Keplerian disk, $\kappa = \Omega$, so how are these different fr. mean motion resonances?

Corotation ← is the moon in one of these w Earth?

mean motion ← these don't seem to amplify orbital eccentricity, unlike the ~~tid~~ Lindblad resonances. Not entirely sure why, though...

$$L = 4\pi\sigma R^2 T_{eff}^4$$

$$T_{eff} = \left[\frac{L}{4\pi\sigma R^2}\right]^{1/4}$$

$$TKO = \left[T_{eff}^4\left(\frac{3}{4}d\tau_{1/2} + \frac{1}{2}\right)\right]^{1/4} = T_{eff}\left[\frac{3}{4}(d\tau_{1/2}) + 1/2\right]^{1/4}$$

$$\cancel{P_{rad} = Crad \cdot Arad \cdot TKO^4}$$

$$P_{rad} = \frac{4\sigma}{3c}T^4$$

I think we want opacity table #66? But check the input conds you were feeding the code. F & polytropic calcs preceding it: check your input metallicities...