6/18/2012

~~DATA~~

$i_{dm} = 0$

~~if (Mj - Atmass1)/(Mj =~~

~~if (z~~

if (M_j > atmass1 & $i_{dm} = 0$) ← this determines where the "bottom" of the atmosphere is...

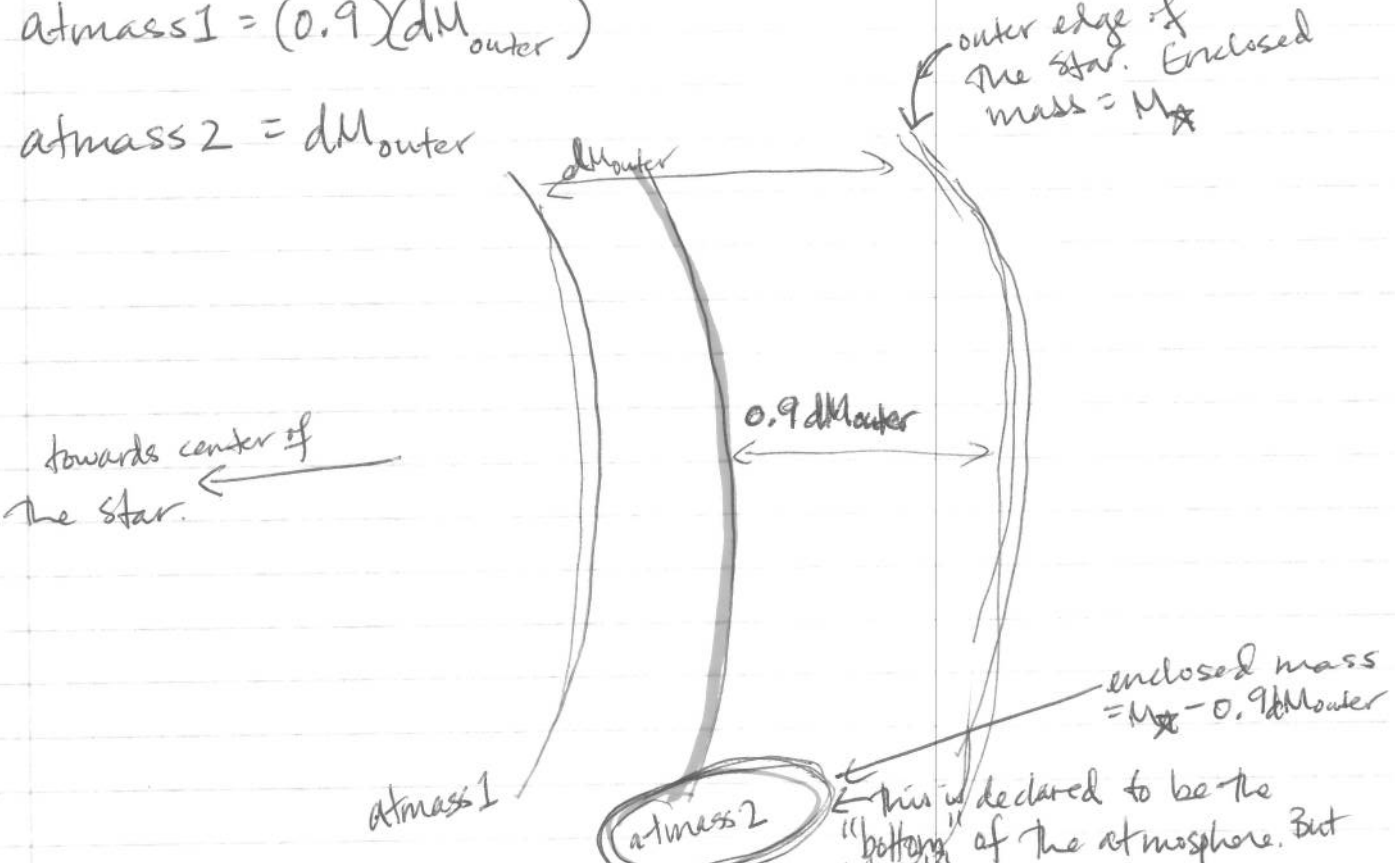
then $i_{dm} = j$

↓

and calculate & store the T_{atm}, P_{atm}, & ρ_{atm} values as the outer stellar boundary conds.

atmass1 = (0.9)(dM_{outer})

atmass2 = dM_{outer}



How are the physics of the atmosphere different fr. the physics of the interior (where you have to apply the Henyey calcs.)?

→ something about radiative transport?
→ the eqns of HSE (i.e. the pressure diff. eqn.) has to be the same, though...)

→ within the atmos., all physical quantities seem to be functions of P & T only (not of R, or L, or M).

according to ~~Kippenha~~ Kippenhahn & Weigert, this is b/c the interior structure diff. eqns. depend on M. Since M changes so little in the atmos, however, you have to switch over to a variable/physical quantity that does change significantly w/in the atmos.

(3)

outer edge of star. Enclosed Mass = $M_\star$, $R = R_\star$

$\tau = 2/3$ surface: the photosphere. $T = T_{eff}$, $R = R_{\tau=2/3}$, $M = M_{\tau=2/3}$

tmass2. enclosed mass = $M_\star - 0.9 dM_{outer}$. $P = P_{atm}$, $T = T_{atm}$, $\rho = \rho_{atm}$ ← all defined at this point.

atmass1. enclosed mass = $M_\star - dM_{outer}$. $R = R_{atm}$ ($M = M_{atm}$, in some sense? yes?)

↓ towards the center of the star

6/18/2012

$R_{\tau 3/2}$ = Radius of the photosphere ($\tau = 2/3$ surface)

R_{M2} = Radius @ the (first?) 1/2 way (in τ) pt. of the current RKt step.

$Z\emptyset = 0.0$

Rstar = an input parameter to the atmos ~~ro~~ subroutine; the total/outer radius of the star.

Initially $R_{\tau 2/3} = R_{star}$

RK0 = 0 initially (in the RKt process)

$$R_{at} = R_{star} - \max\left[0, R_{current} - R_{\tau 2/3}\right]$$

$R_{\tau=1} - R_{\tau 2/3}$

$$= R_{star} - \max\left[0, 0 - R_{\star}\right]$$

$R_{at} = R_{\star} + R_{\tau 2/3} - R_{\tau 1}$

$R_{at} = R_{star}$

$R_{at} = R_{star}$ until $\tau > 2/3$, at which pt. the value of $R_{\tau 2/3}$ gets reset & $R_{\tau 2/3} = R_{\star}$ to... something else.

→ figuring out what that "something else" is, specifically.

$R_{\star}$ vs R_{τ}

6/18/2012

~~2.8005~~
~~- 3.0505~~

$$\begin{array}{r} 3.0505 \\ -\ 2.8005 \\ \hline 0.2500 \end{array}$$

$$\frac{0.25}{10} = 0.025 \Leftarrow \frac{0.05}{2}$$

How is dTaue getting ÷ by 2 in my calcs?!

~~1.3×10^8~~
~~3×10^7~~
1.5×10^8

7.83e9
> 1.5e8
7.67e9
> 1.5e8
7.52e9
> 1.5e8
7.37e9

~~52~~
37
15