Title: March 9, 2012 Research/Programming Notes & Progress
Date: March 9, 2012 4:47 PM
Category:
Tags: research, Henyey code, Bodenheimer code, finding initial conditions, from home

March 9, 2012 4:55 PM

Location: from home
Computing context: Macho-Mac2

Already done today:

- scp'ed over my Bodenheimer code directory contents from the astro thin-client network to my ucolick account.
- modified find_dT_thresh.ph directory structure to work on Macho-Mac2
- Investigating the electronic lab notebook capabilities of this-here software (Stefano left me a veritable education in useful apps by not un-installing everything on this computer. Stefano is a super-badass!
- Connecting to any of the campus servers (either astro network or ucolick network) from home (but not, interestingly, from Mike's place) is REALLY SLOW: too slow to do research effectively, IMHO.
  - Do work locally on this machine, and
  - Need to figure out an efficient system of syncing my work and updates made locally to my ucolick account.
  - And, also need to make sure that the file structure stuff in my scripts will work seamlessly on both systems, without any (or much) editing of filepaths or whatever specified in these perl/python scripts.

Things in progress:

☐ Get the Bodenheimer Henyey code to converge for a 0.3Msun?

☑ Tried the out-of-the-box 0.3 Msun polytrope (pmsstar03.inp) setup in find_dT_thresh.pl. Model didn't converge at ANY timestep value between $1 \times 10^8 to 1 \times 10^{12}$ seconds.

☐ Maybe this is because something in the .start file that find_dT_thresh.pl is using for the smaller mass stars is inhibiting convergence? To test this, run the pmsstar03.inp polytrop output with the pmsstar03.start file input, and see what comes out

When I run the pmsstar03.start through thecode.f (as of right now), at low luminosity fraction settings (for example, around 1%) I get "SMIN below limit" errors on the luminosity variables. How did I fix this type of error before?? I think maybe by setting dTime to a smaller value??

☑ The LACK of fusion in my modified version of the thecode.f might also be responsible for these low-mass protostars' failure to converge. To test this, run the same test as above, but with the fusion parameter turned fully on, and then again with it turned fully off.

Trying it now with dTime = 10^10 seconds (rather than the default value of 10^11 seconds), and EFRC = 0.
No convergence due to those same SMIN constraints on the luminosity values...

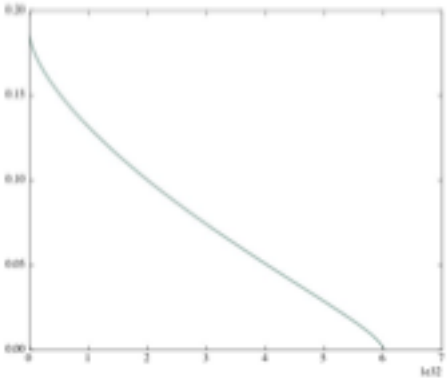
Trying it now with dTime = 10^9 seconds. No convergence due to SMIN constraints on luminosity values.

*The convergence problems are *definitely* caused by the lack of (sufficient?) fusion luminosity*

☐ Try to get the Bodenheimer code to converge for *any* mass under 0.5Msun
☐ Look at the convergence behavior (iterations w/in a single timestep) for, say, 0.5Msun vs. for 0.45 or 0.3 Msun
☑ Need to check/modify thecode.f so that it actually prints out iteration info every N iterations
☑ If that's not the problem, need to check my perl scripts (parse iteration output? maybe?) to make sure they're not what's causing successive

iterations/corrections info model files not to get parsed/written out correctly to the /debugging_results folder.

- [ ] Try looking at the iterations as this setup attempts to move towards convergence...
    - [ ] This means I'll need to write myself a python script to plot the output...
        Working on it.
        Currently adding successful ipython commands to:
        /Users/laurel/Desktop/Research/BodenheimerCode/plot_iterations.py



This here (above) is an example of a graph that my python fumbling has generated. It's a .jpg image.

test

This is the same graph, but saved/exported as a .pdf (from w/in python). It appears not to be displaying itself here within the journal entry. However, if you click on it, you can view the pdf with no problem.