Title: March 16, 2012 Research/Programming Notes & Progress
Date: March 16, 2012 4:26 PM
Category: Work
Tags: python, research, Henyey code, Bodenheimer code, finding initial conditions, from campus

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Location: on campus
Computing context: Macho-Mac2

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## Helpful computer hints discovered today:

- To open an application (e.g. Preview) from the command line, type:
  - open -a preview.app <path to file you want the app to open>
- To find the full path to where your python modules (that you, say, installed from the internet) are actually living on your filesystem, type the following command in at the python prompt:
  - <moduleName>.__file__

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## Continuing from last time:

- **Actual science stuff w/ the code:**
  - Try to answer "why aren't the under 0.5M$_{\odot}$ (w/ no fusion) simulations converging, regardless of their timestep sizes?"
    - Plot the 0.5Msun (w/ no fusion) run results
      - First, need to re-run the 0.5Msun dTval_12 simulation, but make sure to set it to output iteration info along its way to convergence. Then, plot that.
  - ~~How to incorporate running that sed command on the models' headers (if necessary) into my python code?~~
    **Done. See the stuff near the start of /Users/laurel/Desktop/Research/BodenheimerCode/MyPythonGUIPlottingScript.py for the code/commands that accomplishes this.**
      - Compare them to the 0.3Msun (no fusion) results.
      - Try to figure out why the 0.3M$_{\odot}$ is going off the rails, but the 0.5M$_{\odot}$ isn't.
    - Run thecode.f with 0.45M$_{\odot}$ (no fusion)
      - plot the results
      - again, try to spot why it might be going off the rails
  - See if using the 'mass chain-down' technique with the 0.5M$_{\odot}$

(no fusion) converged model as a starting point can produce converged models for lower mass (no fusion) balls of gas.

- Implement a mass chain-down proceedure in thecode.f
  - Add a ‘mass chaindown?’ flag to the .start file, and modify thecode.f to be able to read it in
  - If the ‘mass chaindown’ = true,
    - read in a converged model
    - evolve it forward in time by 10(?) dTthresh steps
    - then decrease the mass of the system by some factor
      - (By what factor? How much or how little can you successfully decrease the mass at any given chain-down step? Need to think about this more once I get to this point...)