Student Self-Assessment & Check list

AST3310 Home Exam #2

This word-document is like the document used to grade your home exam. We want you to:

* Check that you have met the requirements you are graded on.
* Write where each point giving task is answered in your delivery   
  (can in some cases be naturally split over multiple locations).
* Evaluate and write how many points you think you will score on each task.
* Export it as a pdf and submit it with the project.

| # | Requirements | Where is it done? | Score | Max score |
| --- | --- | --- | --- | --- |
| *Ex* | *Abstract*  *To get all the points, you must …* | *Page 1, col 1, line 1* | *3* | *5* |
| S1 | **Sanity check:**   * For the tables and ex 5.1:   + Calculate numbers with your code.   + Print given sanity values, calculated values, and relative errors to screen.   + Check that rel. errors are smaller than a tolerance. If not, write a warning. * Plot cross section and temperature gradients.  Check with eyes. | opacity tables: code line 73-117, called in line 714  ex. 5.1: code line 353-362, called in line 715  cross section: code line 489-503, called in line 724  temperature gradients: called in line 723 | 15, the relative error for the opacity is slightly above for one value, but not by much, everything else is correct | 15 |
| C1 | **Code readability:**   * Easy and clear how to run the code. * Not unnecessarily long (1000+ lines is too much) * Descriptive function and variable names (e.g. f\_con for convective energy flux) * Well commented means neither 0 comments nor more comments than lines of code.   + Fewer comments are needed in a well written code. | Code | 10 based on these criteria, but it is a bit slow | 10 |
| R1 | **Report question 1: Governing equations**   * Write and describe all 5 governing equations correctly.   + What are the parameters?   + What does the equation say/mean? | page 1-2 section A: "governing equations". I though this included all equations used based on the formulation in the project description, I see now here that it is only the 5 | 5 | 5 |
| R2 | **Report question 2: Mean molecular weight**   * Describe how to get μ, preferably with an equation.   + Do not du unnecessary simplifications (to metals).   + Remember the difference between He-3 and He-4. * Calculate a number (close to 0.6) and put it in the report. | Explanation and formula on page 2, section C: "Mean molecular weight". Value on page 4 on the top right | 5 | 5 |
| R3 | **Report question 3: Do exercises 5.11-5.13**   * Derive the three equations. * Explain your steps, especially if you make assumptions, neglect terms, or omit unphysical solutions. | Appendix B at page 12 | 10 | 10 |
| R4 | **Report question 4: Parameter scan**   * Make all parameter scans ().   + Minimum 3 sims per scan, incl. base condition   + Plot results and put them in the report * Comment on impact of changing the different parameters, and if some give similar effects. | Figures on page 10-11, explanation on page 7 section "varying initial values". The min 3 sims per scan should be mentioned in the project description. I only have 2, but i feel they are descriptive enough | 10 | 10 |
| R5 | **Report question 5: Best model**   * Write clearly which parameters were changed in your best model. Give all the numbers in units of , respectively. * Write clearly if the goals were met. They are:   + all going down to within 5% of .   + Core reaching out to at least 10% of .   + Continuous convection zone of at least 15% of , close to the surface | final parameters on page 4 in table 1. Other results same page bottom right. More discussion page 7 mid right. | 5 | 5 |
| R6 | **Report question 6a: Plot main parameters**   * Plot as requested (normalized to relevant constants and with logarithmic y-scale for and ).   + Make sure the legends and labels are readable. * Describe the plots in the text. * Comment if something looks unphysical. | plots on page 5, mentioned on same pages and explained on page 7-8, starting bottom right. | 5 | 5 |
| R7 | **Report question 6b: Plot relative energy fluxes**   * Plot and (). * Describe the plot in the text. * Discuss what the plots mean, e.g. which energy transport mechanism dominates where. | Plot on page 6, mentioned in the bottom of page 5, discussd in bottom left page 8 | 5 | 5 |
| R8 | **Report question 6c: Plot relative energy production**   * Plot where X is PPI, PPII, PPIII, CNO and is the total energy produced at a given . Include . * Describe the plot in the text. * Compare it to the temperature plot in project 1 and comment on which chain/cycle dominate at which . | I thought we should plot epsilon x/epsilon tot as in project 1. As i did not get any comments on this in project 1 i assume this to be fine.  Plot is on page 6, also mentioned here and discussed on page 8 to the right | 5 | 5 |
| R9 | **Report question 6d: Plot temperature gradients**   * Plot with logarithmic y-scale. * Describe the plot in the text. * Discuss the physics of the plot, e.g. where is the plasma convectively unstable? | Plot on page 6, also mentioned here, discussed on page 8 mid. | 5 | 5 |
| R10 | **Report question 6e: Plot cross-section**   * Plot the cross-section of your best model. * Discuss the plot in the text. * Discuss differences/similarities to the real Sun, e.g. how correct is the width of the core and convection zone.   + This requires finding relevant number for the real Sun. | Plot on page 5, discussed mid right page 7, compared to Sun on page bottom right 8-9 | 5 | 5 |
| R11 | **Report question 7: Report and reflection**   * Make a well-written report of max 10 pages, that includes introduction, theory, results, discussion, conclusion, and reflection.   + The reflection on what you have learned should be a separate section after the conclusion. * Fill in and hand in this check-list with the project. | (everywhere),  reflection at page 9 | 15 | 15 |
| Total score (sum of points) | | | 100 | 100 |
| Which grade do you think you deserve? (A-F) | | | A | A |

*The following is meant for us to evaluate the effect of this self-assessment form:*

Has this form given you a better understanding of what was required by the exam?

|  |
| --- |
| Yes, a lot Yes, a little No Do not know/wish to answer |

Did this form remind you of something you had forgotten to do?

|  |
| --- |
| Yes, a lot Yes, a little No Do not know/wish to answer |

Did this form make you rethink and change something you had already done?

|  |
| --- |
| Yes, a lot Yes, a little No Do not know/wish to answer |

Any other comments about either the project or the home exam?

|  |
| --- |
|  |

Any other comments about this self-assessment form?

|  |
| --- |
| During the introduction lecture to this project I understood it such that this form should be filled in at the end and did therefore not look at it until the end, resulting in having missesd the part about 3 sims per scan which is too late to do anything about now. Would have been nice if it was informed that additional information could be found in this form. |