Review and recommended revisions of "Final Burnup Calculator for Multibatch Core Loading"

By: Maria Pinilla

This project seems to be a useful visual display of the relationship between batch size for nuclear reactor refueling, and useful fuel life-time. The presentation of reactor multiplication factor and reactivity as a function of fuel burn-up is a valuable tool in understanding reactor kinematics. This project interprets and presents data that was compiled utilizing previously verified software. While the technical merit for the work is evident, many revisions (some major) are recommended before final submission.

The following comments all reflect three general trends of deficiency in the project report:

1) Insufficient detail
2) Lack of citation
3) Informal presentation

The comments are listed in order of appearance. Major revisions are denoted by bold-facing.

1) Remove or rename
2) Elaborate what costs are reduced
3) Reflective pronouns should be avoided. Consider using the phrase: "A graphical user interface was developed…" and "The PyQt4 module was used to create…"
4) **Results should be included in the abstract**
5) **In general, the abstract seems insufficient**
   a. More descript language should be used
   b. Describe what the goal of the software is… what value it adds
   c. Less objective language should be used (simple, intuitive)
6) This sentence should be rephrased more concisely
   a. Avoid vague words (it, these)
7) **Needs explanation and citation**
8) **Needs citation**
9) **Avoid using the words "I" and "my"**
   a. This is a recurring theme that should be addressed
10) The phrasing makes it sound like you developed Poropy
    a. Rephrase and cite the Poropy software package
11) Make more concise
    a. Consider just using "… multiplication factor (k_{inf}) is the ratio…"
    b. Also, I believe it should be a lower case 'k'
12) Explain neutron generations
13) These sentences can be rephrases more concisely
14) **This entire paragraph needs numerous citations**
    a. Unless the knowledge was developed specifically by the present work, or is 'common knowledge' you need a citation
    b. I would consider the content of this paragraph to not be common knowledge for the present audience

15) Remove 'it', replace with 'and'
16) Use proper equation notation (you will need to verify with the formatting guide)
17) Requires citation
18) Requires citation
     a. Intuition suggests that this relationship is not linear… if it is you should show how / why
19) Consider rephrasing with "Nuclear reactor cores are refueled in batches"
20) Explain why this is and add a citation
21) Are the characteristics the same or similar, explain why
22) Explain how the energy output is increased, and by how much (citation would also help)
23) Explain why refueling is expensive (add citation)
24) Remove a word to fix this typo
25) Consider rephrasing as "… a two-batch core was considered …"
26) Quoting a reference directly is undesirable
     a. Either show the calculation process (with citation) and report the conclusion or,
     b. Just report the conclusion with a citation
27) Sentence is vague
28) Please explain how the old fuel actually removes neutrons from the fresh fuel
     a. It seems more likely that the old fuel simply produces fewer neutrons from fission than the fresh fuel
     b. The particular wording here seems un-physical
29) This sentence is unclear and should be rephrased for clarity
30) An equation would help explain this more concisely
31) I agree that additional content should be added regarding burnable poisons
32) Rephrase for clarity and professional presentation
33) This sentence adds no content. Remove.
34) Remove marked section
35) More specificity would help clarify
36) Similar to 9)
37) Similar to 9)
38) User defined batch numbers would be far more useful
     a. Consider changing this from a selection to user input value for the final version
39) User defined enrichment would be far more useful
     a. Consider changing this from a selection to user input value for the final version
40) This acronym is not defined
41) Use k_{inf} instead
42) Figure title should be more descriptive and point out a conclusion
43) Vague language (These) should be avoided
     a. Reword for conciseness
44) Please elaborate on how this is accomplished
45) A description of useful applications would be beneficial
46) Please describe how the software handles a situation where the parameters do not correspond to the selected display (if this is possible)
47) Similar to 9)
48) Please elaborate on why this is

49) Please draw a conclusion from these figures rather than just listing them as examples
    a. If the figure does not add to the report, it should be removed
50) This wording is vague, please rephrase
51) The results suggested here would add greatly to the report
    a. Please add as suggested
52) Make sure the citations have the correct formatting
    a. Line up the hanging indent
53) Do these things and then remove the list