NE 155 - Introduction to Numerical Simulations in Radiation Transport
Final Project
Due May 10, 2016

Below is a list of possible term projects (there are Monte Carlo and deterministic options). If you intend to share a project among a team of students (maximum three students per team), check to ensure that the project has sufficient scope. The project is 30% of your grade and is due on May 10 at the time of the final presentation. The following schedule will be imposed:

April 1: Decide which project to work on; turn in list of team members (if applicable) and a one- or two-page *abstract*, including:

1. What you plan to do

2. Major steps to execute the project

3. Deadlines associated with each step

4. What you need to do to accomplish each step (laying out a path to success)

5. If in a team, the division of work

April 15 : Submit a written *interim* report (4, 6, or 8 pages maximum for 1, 2, or 3 people, respectively) explaining your project. See the interim report rubric for details of what to include.

May 10: Presentations (between 5 and 15 minutes, depending on project and team size). See the code presentation rubric for details of what to include.

May 10: Final written reports (about 6-7 pages/team member as a rule of thumb) are due. See the report rubric for details of what to include.

Potential project topics:

1. Write a 2D diffusion solver that has vacuum boundaries on the bottom and left faces and reflecting boundaries on the top and right boundaries. I have more detailed specifications and some helpful tasks to facilitate completion if you choose this project.

2. Write a 2D transport solver that has vacuum boundaries on the bottom and left faces and reflecting boundaries on the top and right boundaries. I have more detailed specifications and some helpful tasks to facilitate completion if you choose this project.

3. Write a simple Monte Carlo solver that will include tallies, a subset of sampling routines, and implicit capture. I have more detailed specifications and some helpful tasks to facilitate completion if you choose this project. (It is unlikely this will be an easy choice if you do not already have familiarity with MC since we're covering that last).

4. Propose your own project; this can include writing a code or studying and characterizing the way a code performs. Please use this as an opportunity to expand on or compliment work you are already doing.

5. If you really really want to do an analysis project we can talk about that as an option.

PLEASE use version control for your project.

If you are comfortable writing your project in Python, consider using PyNE (http://pyne.io) to facilitate your project. Depending on what you do, we might be able to contribute your project back to the PyNE code base over the summer.