PHYS 0704 **Senior Project** **Fall 2020**

Assignment 1 **Title, Abstract, and Supplies List** **Due: Mon. 9/14 @ 5 PM**

For the first week of the semester, as you begin working on your senior project, this seminar assignment is designed to help you organize your thoughts on what you hope to accomplish this term. With that in mind you should

1. **Write a Title and Abstract for your Senior Project:** After discussing with your research advisor, write a brief summary to verify that you have settled on a project topic. What you have already written from the project proposal process might be sufficient but should be updated if there is a significant evolution of the topics or scope for your project. **Submit your pdf document on the course Canvas page (go/phys704)**. Make sure that your last name appears in the filename as well as on the first page of the pdf document. Use the templates on the course webpage to format your abstract as it will appear on the first page of your project report.
   For useful guidelines for writing effective abstracts, follow this link
   http://sites.middlebury.edu/middsciwriting/by-genre/journal-article/abstract/

2. **Create a preliminary supplies list for your project:** Write a list of anticipated supplies and equipment, including computer software or lab instruments, necessary for your project. These should be discussed beforehand with your advisor. **Submit your pdf document on the course webpage (go/phys704)**. Make sure that your last name appears in the filename as well as on the first page of the pdf document. No particular formatting is required.

   The appropriate length of this list will vary. For example, for a theoretical project, you may only need a particular piece of software (e.g. Mathematica on a personal computer). For an experimental project, you should list as many parts as you know about. This purpose of this assignment is to make sure that you have everything you need in order to be successful. This is also a good place to document how you plan to organize your research materials for this project, where you plan to store your data, and how you plan to document your progress and share it with your advisor (e.g. entirely using the **research record** or supplemented with another type of documentation).

3. **Complete the any required safety training.** All PHYS 0704 students who require access to MBH for their project are required to complete the online Hazard Awareness Training program (go/mbhhazardtraining); this will make you eligible for after-hours card swipe access to MBH. If you are working in a lab space as part of your project, you may also be required to complete additional training to be eligible for receive keys to the laboratory. If you are working in a laser lab this semester, you will required to complete the laser safety training module online (go/lasertraining); this includes all students who will be working in MBH 520, 523, 524, 618 or 629. More information on lab safety in MBH can be found at go/labsafety. Students whose project does not require access to MBH are not required to complete any safety training.

Other things you should consider:

- **Prepare a Senior Research Project Supplement application** (*Optional*). The Senior Research Project Supplement can allow you to purchase items for your research project that you don't have available to you already. Applications for up to $350 are accepted throughout the academic year, funds permitting. Requests for up to $1,200 must be submitted by the October 1st deadline; if approved, the funding will be available in mid-October. The online application requires a project description (less than 750 words) which should explain "how your past academic work prepared you to implement this project". It also requires an itemized budget and a letter of support from your advisor. Use your supplies list to help decide if you would like to apply for this supplement, and to organize your budget. More information can be found at go/srps.

- **Install any relevant software on your computer**: You will need to use software to collect and plot data, create figures, format your poster, and compose your report. Some of you may choose to use standard office software (e.g. Microsoft Excel, PowerPoint, & Word) to fulfill many of these tasks; however, there are scientific software options available to you which are more versatile. Guides for installing this software can be found on the Canvas page.

    - **Data Analysis and Plotting:** In addition to standard spreadsheet software (e.g. Microsoft Excel) you may consider using scientific software such as Mathematica or Matlab for data analysis and/or plotting. If you are already familiar with Python, there are a variety of useful Python modules that are very useful for plotting any data analysis (e.g. numpy, scipy, matplotlib).

    - **Figure and Generation:** A vector graphics program like Adobe Illustrator is the gold standard for generating images and posters and allows the most flexibility. Standard presentation software (e.g. Microsoft PowerPoint) can also be used for simple figures. Note that Illustrator cannot be installed on student-owned machines but is available in all computer labs. Inkscape is an open source alternative to Illustrator that is free to install on your personal computer.

    - **Document Typesetting:** Two basic options for typesetting your project report are standard document editors (e.g. Microsoft Word) or Latex. If you anticipate having a a significant number equations in your report, I would recommend using Latex, which is designed to format mathematics elegantly. The equation editor in Word is often enough for simple equations but is considerably less versatile. Latex can either be installed directly on your personal computer, or you can use a free web-based service like Overleaf *(https://www.overleaf.com/)*.