Call out

I am interested in supervising undergraduates in research projects related to my research interests or other areas that involve computational methods where my expertise can be useful, such as solving optimization problems. If you are an undergraduate (not necessarily a Physics major) interested in learning skills in computational modeling, algorithms and scientific programming, you are invited to contact me. I will be happy to discuss possible projects of mutual interests, and to advise you in career options in high performance computing, and what courses you should consider taking to accomplish your goals in a computational field.

Doing research as an undergraduate is a privilege, not a requirement.
Therefore, I have the following expectations with undergraduate students that work for me.

1. You must have an overall GPA of 3.0 or better, and your average GPA must be better than 3.5 when confined to your math, science and technical classes.

2. Some students become a member of a lab over a few years, and get involved in on-going research, or they have their own interest they wish to pursue. This is why some undergraduate students are involved in substantial research. However, I have seen students perform poorly in my upper division classes because they neglect doing homework in favor of doing research. This is not going to help you in the long run. Your GPA is important for many reasons, but most importantly, you need to learn the material in your major as this forms the foundation of your discipline! Your course work must take highest priority over doing research without class credit.

3. If you get paid in the form of a stipend, your responsibility to be productive in research is similar to holding an outside job. That is, a minimum number of hours must be spent each week.

4. If you are doing research for credit (such as an honors thesis) then treat your tasks that must be done to meet your project goals like a class (i.e. equal priority in distributing your workload).

5. I expect the student to be self-motivated, meaning we discuss project scope, objectives, goals, and the student works toward meeting the project goals. We discuss progress and snags as they arise, but there is not a formal schedule, like that is typically outlined in course syllabi. As a consequence, some students will be very productive while other students will not be. Much of the experience gained in doing research is to learn how to be resourceful, and independently solve problems. There is a full spectrum that spans between asking how to do everything, and refusing to get help on anything. Sometimes it is good to ask how to do something to save yourself a lot of time, while other times it is best you spend time and learn something the hard way, which includes reading relevant sources and figuring things out on your own. Both extremes are not good if that is all you do. My method to keep the student in proper balance is to have the students present weekly updates, and issues are worked out on a case-by-case basis.

6. I view my role supervising undergraduate research as purely teaching, and have in the past little expectation that the research performed by undergraduates ever get published. One reason for this is because the assigned projects are mainly for educating the student of material that is not cutting edge. A second reason is that usually a student will not make sufficient progress to reach a point for a publication, but then the project dies once the student leaves. However, as my research emphasis has recently expanded to include many more applications, there are more opportunities for undergraduates to participate in cutting edge research that are on-going by graduate students. However, this will greatly depend on the student's skills, interests and commitment to the project. For many students, a custom designed narrow scope project is best.

7. Every student is on his or her own path. Successful research experience means something different for each individual. It could even mean that you learn what you do not want to do!