How To Get An Undergraduate Research Position

J. Gartner III
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1 Introduction

During the course of earning a degree in physics, students will learn many skills in the classroom. However, students who only learn from the classroom cheat themselves of the valuable experience of undergraduate research. Many students find it difficult to find research positions or do not even want to participate in research. The purpose of this paper is to convince undergraduates to become involved in research and to give students seeking a job the skills they need to find a position.

2 Motivation

A very reasonable question to ask is why a student should become involved in research. Students are already busy with difficult classes and the daily toils of college, so why should they put a job on top of that? The answer is that the experience gained in undergraduate research is indispensible. Students will gain experience in a broad range of catagories that they would not be exposed to in the normal course of study as a student. If a student plans on going to graduate school, they will end up doing research in some field. This means that having some amount of research experience will be valuable in determining the type of research that a student will do. Even if a student does not find their ideal research position, they will learn what they like and dislike about a particular job and can use this information to base future choices about jobs. A research position will also give a professor an opportunity to become familiar with the work habits of a student. Professors who know students well can write better letters of recommendation for students seeking jobs or grad school positions. Possibly the best reason that a student should be involved in research is that it gives them an opportunity to use their knowledge of physics. Students who do research often are more interested in their courses, as they have seen first hand how the effects they study in the classroom exist in the laboratory.

3   Getting A Job

So you want a job, but now you have no idea how to get one. The physics research building is very large, and there has to be a more efficient way of getting an in than going door to door. Some students effortlessly get jobs while others seem to struggle for weeks to no avail. Here are a few things a student can do to dramatically increase thier chances of finding a position.

3.1   Determine Your Interests

There are several fields of study from which a student will choose. Each field offers unique challenges and will have their own charms. Determine a few (one or two) fields that interest you, and identify the things in this field that you would like to study. The best way to look into this is to go to the physics department website and look at the research efforts that are going on. Another way to learn about the different fields of study is to attend SPS meetings. SPS meetings will give you a fairly detailed explanation of what is happening in a specific research effort. In addition, this will put you in the same room as the professor doing the research, and will allow you to interact with them at the end of the meeting. The third way of identifying a field of interest is to take physics 295 and other physics survey courses. If you are still unclear of some of the aspects of specific fields, your undergraduate physics advisor should be able to either answer your questions or at the very least point you in the direction of someone who does.

3.2   Continue To Narrow Your Search

After you have found a specific area of physics that interests you, the search continues by finding interesting efforts in that field. I would suggest finding two to three professors in two different fields (totaling four to six professors) who are doing research that interests you. The same methods that were used in the above section should be used to narrow this search. Another good technique for finding professors who are doing interesting research is to ask students who already work for those professors and ask them what they do. If they are enthusiastic about their experience, it is likely that you will have a similar experience with the same professor should you get a position with them.

3.3   Research Your Research

Now that you have identified possible candidates to apply to, it is time to roll up your sleaves and learn a thing or two about their research effort. Most if not all of the professors here maintain web pages. Go to them and read about the type of research they do. Obviously, you are not going to understand everything that appears in their papers. However, if you make an attempt to learn a few buzz words and try to aquire a general sense of the goals of their efforts, you dramatically increase your attractiveness as a researcher. Students who do this display enthusiasm for the field, show an independant ability to work, and show that they have the basic skills necessary to do research. The more that you are able to find out about a particular effort, the harder it will be for a professor to deny you a position.

3.4   The Day Of The 'Interview'

After having identified specific research efforts which interest you, and after you have learned a basic amount about the field in which you wish to study, it is now time for you to ask for a job. The first thing to consider is your appearance. While the physics community tends to be more informal than the business world, it is important to remember you are applying for a job. A suit would certainly be over dressing, and a T-shirt and torn jeans will be under dressed. Business casual is more than likely the best route (for men, khaki's and a polo and for ladies a blouse and either a skirt or dress pants). Dressing appropriately certainly will not get you the job, but under dressing could certainly keep you from a position you deserve. In addition to being dressed appropriately, students should be well rested and well groomed; the day after the Michigan weekend party is probably not ideal for stumbling into labs. Lastly, the student should be prepared to identify skills they possess, which would make them an appealing candidate for an undergraduate research postion. Things to highlight are any programing knowledge, exposure to working with computer hardware, and previous experiences doing statistics or analysis. It is not the end of the world if you do not have much or any of those experiences, in fact few undergrads have experience prior to a position. While a resume may not be necessary, a cover letter stating why that particular research effort interests you may be helpful.

3.5   Interacting With Your Target Professors

You are now ready to go ask for your job. At this point your hard work should show off how intelligent you are. If you made an honest effort to learn about the research effort you are asking about, you have no reason to be nervous. Also, keep in mind that the overwhelming majority of professors here are very friendly, so be calm and let your hard work show. Before you go to meet with a professor, e-mail them first to make sure that they have an adequate amount of time to discuss the position with you, and make sure they know that is what you would like to talk about.

3.6   Be Patient

It is easy to become discouraged if you are not immediately successful. Don't get down if your top choices have no available positions. There are many factors which go into getting a position, many of which are out of your hands. Many times professors already have a number of students working for them, and by taking on too many students, a professor will overburden himself to the point where he cannot help any student. In addition to this, all professors have a limit on the amount of funding they get for student assistants. If this is a reason that a professor cannot offer you a position, consider offering to volunteer until additional funds are available, or until you learn enough to get a postion with a group that has more funding. In addition, keep expanding your selling points whenever possible. If you have a quarter when you are not taking a heavy course load, consider either a programing class or an engineering course. Also, try to find summer programs such as research experiences for undergrads (REU's) which will give you experience doing actual research.