

## **Hunting for Jobs at Liberal Arts Colleges**

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How does one go about getting a job in physics in a liberal arts college? You may be a graduate student, a postdoc or a working physicist looking for a change. Your options for getting advice on this topic are probably limited in any case. However good your PhD or postdoctoral supervisor is at mentoring in research, the odds are good that he or she knows relatively little about the small college environment. By the term “liberal arts college”, we mean any institution focusing primarily on undergraduate rather than graduate education and research; this category also includes some smaller state universities as well as a few colleges with small graduate programs. Such faculty positions include a much more significant component of teaching and working with students than do similar jobs in research universities. However, increasing numbers of liberal arts colleges expect physics faculty to conduct serious research as well. This research is usually expected to include significant undergraduate involvement.

In this article, we hope to share with you a perspective on hunting for jobs at four-year liberal arts colleges. We both are college professors with many years of evaluating job applications and conducting interviews. We have been dismayed by how many good candidates hide their quality in inappropriate application materials and interviews. This essay is our attempt to provide guidelines for effective job-hunting techniques for such searches. Following this advice will not ensure that you will land the ideal job, but it might make your qualities and unique attributes more evident.

In the following sections we will make suggestions about the initial application materials, including cover letters, curriculum vitae, and statements of teaching and research philosophy. The next step for the top few applicants is an invitation to interview on campus, where you must plan carefully to create a desirable impression and to learn what you need to know. Finally, there are some suggestions about the kinds of information one should be seeking in order to make a wise decision about accepting a job if it is offered. We offer as an appendix some suggestions for how readers not yet on the job market can prepare for a future job search.

### **Who’s doing the hiring?**

Why start an article written for the job-seeker with a description of who is doing the hiring? Because understanding the audience for your application materials is an essential aspect of undertaking a good search. The hiring process is generally conducted by a search committee. Because liberal arts colleges have relatively small departments, the odds are good that this committee will contain physicists outside of your specialty who will review your application. As a result, you simply must not write your job applications to a specialized audience in your own subfield. (For the same reason, don’t assume your best chances are necessarily at an institution with an existing researcher in your field. The fields of research found in liberal arts college physics departments are generally broad and varied because of the small department size.) In addition, the committee may include faculty from other fields, possibly outside of the sciences, and even student representatives. Everyone involved has limited time to devote to the hiring process, although usually unlimited goodwill to extend to good candidates. Bear this in mind and avoid overly verbose essays and letters.

### **The cover letter**

The first item a search committee member will see is a cover letter. One of the strongest messages we wish to share is that a generalized form letter leaves a very poor impression. (Even worse is submitting your application for an academic job through an online service that automatically emails your c.v. and other materials to a contact address. Anticipate that such a lack of effort might stimulate a similarly cursory effort from the search committee!) The committee wants to see an application from a person who is sufficiently in tune with the hiring institution so that there is evidence in the cover letter that the applicant is familiar with the institution's character. They want to see proof that he or she is *the appropriate person for that particular position in that particular institution*. When the search committee is facing perhaps a hundred applications, they all begin to look alike except for those that speak specifically to the particular position to be filled.

For instance, suppose one is applying for a position teaching physics at Dickinson College. Much of that department's character is related to its identification with the "Workshop Physics" approach to teaching introductory physics. An applicant who fails to mention an acquaintance with that association will probably not be considered seriously. Haverford College features undergraduate research involvement as an integral part of its science programs, so it makes sense to reflect on this tradition in an application. More generally, failing to at least discuss an interest in teaching when applying for a faculty position at any college can raise a red flag in the minds of the search committee. For similar reasons, your reflections on your thinking about research in this environment should be specific to the institution, rather than being a specialized discussion of your PhD or postdoctoral research.

It is also true that a lengthy cover letter is more likely to inspire a reaction of "Oh, good grief. I don't have time for this! My class starts in five minutes..." Be concise! What is lengthy in this context? A page and a half should be the absolute maximum.

### **The curriculum vitae**

The *curriculum vitae* (c.v. or resume) is the place for all of the factual information the search committee should have available. It should be in list form—publications, degrees, positions held, etc. Be especially careful to organize this material accurately and honestly. For example, it is helpful to list peer-reviewed articles separately from conference abstracts, popular science articles and other non-peer reviewed work. Also, be very wary about listing manuscripts "in preparation." Such a listing implies that an actual manuscript, in an advanced stage of completion, can be produced for immediate inspection. On the other hand, you should include information not ordinarily found in a c.v. For example, it is helpful to have a listing of all of your teaching involvement, including brief descriptions of what you actually did. (That is, a statement like: "Teaching assistant for Introductory Physics II" is uninformative compared with: "Teaching assistant for second semester introductory electricity & magnetism; conducted two recitations, with 25 students per recitation, using exercises adapted from *Tutorials in Physics*.") If you have done tutoring, worked with high school science students or performed any other work relevant to a career in college teaching, make sure you mention it here.

### **The teaching statement**

Many search committees welcome (or require) statements describing the applicant's approach to teaching. Does the applicant seek interaction with students in class or feel more comfortable lecturing? Should laboratories be an integral part of a course or an add-on that provides a different sort of learning experience for the students? If a theorist, does the applicant have enough hands-on experience to teach introductory labs? Your teaching statement should reflect your considered thoughts about teaching physics, avoiding platitudes and emphasizing things that set you apart. You will be more effective if you can relate your discussion to actual teaching (or teaching-related) experiences, and if you can be as concrete as possible. What courses in the college's physics curriculum are you comfortable teaching? Do you have novel ideas about interesting courses to offer? Many departments are interested in offering special topics courses (such as solid state physics, astrophysics or biophysics) at an advanced undergraduate level. Many are on the lookout for non-majors courses, taught at an algebra-based level. Can you teach about the physics of music or offer a course on environmental science? If you have interesting ideas on either count, this is a logical place to share them, even to the point of including an abbreviated syllabus for an unusual offering.

### **The research statement**

You should learn in advance whether the institution expects its faculty to conduct research as a scholarly pursuit or primarily for the benefit of undergraduate researchers -- or both. In any of these cases, you will probably be asked to submit a research proposal as part of your application. In addition to several pages of narrative explaining your research, your statement should include an estimated (but realistic) budget, possible sources of funding, a scenario of the time required to establish the research program, and an explanation of its appropriateness for undergraduate involvement. The Council on Undergraduate Research provides excellent online resources for learning about funding sources for researchers at liberal arts colleges; see the references for more information. Once again, you will want to craft your research description carefully, since you are writing for physicists possibly unfamiliar with your subfield. In particular, be sure to emphasize the significance of your research in the grand scheme of physics and beyond. If your research involves very expensive equipment, extensive travel to off-site facilities or other specialized needs, you will wish to pay particular attention to its feasibility at a liberal arts college. One way to research this is to look at existing research programs at similar institutions to find faculty doing similar work. This is not only a way of convincing a search committee about your viability as a candidate. You will need to assess this carefully to see if you want the position!

Theorists may need to focus especially hard on the question of appropriateness of their research for undergraduates. Again, existence proofs are an excellent way of demonstrating feasibility. We also note that computational research is more readily incorporated into undergraduate projects than is most theoretical research. Theorists should also explain how they can stay in touch with a larger community, through collaborations, by attendance at research conferences, summer schools, etc.

### **The interview**

The purpose of the interview is for both the candidate and the hiring institution to gain a deeper understanding of the appropriateness of the candidate for the open position. The institution is trying to discover those aspects of a candidate that are not evident from the written application. How does the candidate interact with students and potential colleagues? How clear are the explanations shared with students and faculty? How appropriate is the candidate's research program for the institution? Can he or she realistically involve undergraduates in meaningful research projects on a regular basis?

What reasons are evident for the candidate wanting to be a part of the hiring institution? Are there any flags that indicate potential difficulties in the future? Is the candidate truly in tune with the character of the institution? Does the candidate have the energy level required to fulfill the many demands faced by college faculty? A candidate arriving for an interview would do well to have those motivations on the part of representatives of the institution in mind throughout the interview process. What should the candidate try to learn? There are aspects of a job that are usually at the front of the minds of those involved: salary, teaching load, research expectations, standards for tenure, leave policies, lab space, computer support, and research start-up funding. But we've been told that the most important consideration, although more difficult to fathom, is what the community is like. That is, will the new hiree be entering a department that is congenial and supportive, or rife with discontent and discomfort? What is the level of support of the department by the college administration? What sort of rapport exists between faculty and students? What is the surrounding community like? How does the cost of living compare with other locations? Is it a diverse community? How are relations between the town and the college?

One valuable event to ask for during the interview is a meeting with students present but no faculty. Another is a meeting with only junior faculty in attendance, as they may have perspectives closer to those of a candidate for a new position than those who have been immersed in the environment more permanently.

### **The job talk**

A normal part of an interview process is a colloquium given by the candidate. Pay particular attention to the guidelines the search committee offers in advance about how to structure this talk. From hard experience, we suggest strongly that you aim this talk at the sophomore level. We find that many candidates take lots of convincing to avoid the temptation to give a specialized technical seminar. Many feel they have to impress the faculty with the depth of their knowledge, rather than with their ability to share insights about their research with students. It is difficult, if one is immersed in research, to back off and take the perspective of a non-specialist who has to have aspects of the research explained—aspects that are obvious to one as close to the material as the candidate. However, your hard work and physical reasoning will actually come across better in a talk pitched at the sophomore level. (If you don't believe us, observe colloquium speakers carefully for a while, and notice the level and construction of the most effective talks.) You will communicate better with all of your audience, not just the students, and the faculty can ask questions to probe your technical knowledge if they wish. What if the main conclusions of your research are highly technical? Make sure that at least the first three-quarters of your talk is accessible at this level. If you have also been asked to give a sample class in a course as part of your interview, do not use this as an excuse to make your research colloquium inaccessible!

Specifics for a research talk:

1. Make sure that your transparencies or PowerPoint slides are clear and organized—that's more important than completeness.
2. Avoid mind-numbing pages of data and equations.
3. Don't present too many slides for the time.
4. Favor graphical display of data, emphasizing physical intuition rather than mathematical derivations.

- 5 Be sure to include organizational slides giving an overview and final summary. Ask yourself: Have I made the main point of my talk clear to the audience?

Be sure to practice your talk repeatedly, timing it to last the length suggested. You should plan on talking for 45 minutes and leaving 15 minutes for questions if your colloquium fills a one-hour slot. Remember, you need that question-and-answer time to show off your ability to answer questions spontaneously. Don't give in to the urge to talk the entire hour! Finally, try to relax during the questioning. Remember, it's good to be asked questions following a talk; that shows an engaged and interested audience. Prickly responses to questions give the worst of impressions. And humor always adds to the appeal of a presentation. (The references list two excellent articles suggesting many good tips for giving scientific talks.)

### **Still more about interviews**

It is customary for candidates to meet separately with students for an informal meeting, often over a meal. Be sure to take full advantage of such a meeting to learn about the institution and its students. Listen to, as well as talk to, the students. Your interest and enthusiasm will be apparent to them, so remember their goals in attending this meeting. They wish to learn about you as a potential teacher, mentor and person. This is not a time to become distant and distracted thinking about your talk and faculty interviews to come!

Your interviews with the college's faculty will go more smoothly for both of you if you take the time to educate yourself about the department and each member in advance. This is easily done using the internet and selected publications. You then will know the structure of their curriculum, as well as the background and interests of each person interviewing you. This will immeasurably improve your ability to explain your own work and abilities, as well as to ask intelligent questions. They will not have to waste valuable interviewing time filling you in on basic facts about their institution.

Where *does* one find out about issues such as salary, startup funding and benefits? Such topics may be covered in a separate meeting with a member of the administration. Make sure you will get such a chance. If you won't have such a meeting, find out with whom you should discuss these matters, so they do not get forgotten in the rush of the actual interview.

One awkward issue that can arise involves unwelcome personal questions. Federal employment equal opportunity guidelines clearly forbid employers from inquiring about your marital status or other family matters, but many faculty on a search committee still will ask detailed questions about your personal life. While some candidates do not care, for others this can cause great concern. Will a dual career couple be looked at as a hiring risk? Will your marital or family status make you a less desirable candidate? Possible responses to unwelcome questions of this sort can be found at the *Report on the Dual-Career-Couple Survey* at <http://www.physics.wm.edu/dualcareer.html>, written by Laurie McNeil and Marc Sher.

Once again, be sure to appreciate the fact that any non-science faculty sitting on the committee, and attending your talk, are likely to be voting members. Respect their roles; ignore their input at your peril! You will create a much stronger impression if you show an interest in, and consideration for, *everyone* you encounter on your interview, including support staff and students.

It should be a given, but be sure not to undermine an otherwise good interview with thoughtless remarks or behavior. When asked what research students can do in your lab, you should have a carefully worked out plan for senior research projects. You should not be surprised and suggest, “Well, they can help solder circuit boards or clean glassware.” Don’t ignore researching the institution, then startle the committee with a sudden epiphany: “Wait--you have to teach your own labs without graduate teaching assistants!” We relate these remarks only because, ironically, they were made by otherwise talented candidates talking to our dismayed colleagues at other institutions.

It’s a good idea to follow up the interview by sending a letter to the chair of the search committee expressing your appreciation. This also gives you a chance to write briefly reflecting on your visit, telling them information about questions that may have been left unanswered, sending them new publications or preprints, and otherwise bolstering your application. If you have not heard back from the search committee after an extremely long time, you may make careful inquiries, but do try to be patient. The committee may have you on a list of possible hires, but they may be waiting to hear from a first or second choice candidate who has them on hold. Frustratingly for all parties, this process can take weeks. Your turn may come, and you do not want to hurt your chances by appearing impatient and demanding. One exception is the case when you already have a competing offer firmly in hand. In that case, the search committee should be politely notified by phone that you are now working under a deadline imposed by the competing institution.

### **Conclusion**

Whether contemplating an application cover letter or an interview, keep in mind the perspective of the hiring institution. Remember that the members of the search committee are probably faculty members who have teaching and research responsibilities in addition to advising and supervising students, serving on college committees, and trying to find time to finish a grant proposal due in three days. They will appreciate a concise application, directed toward the hiring institution that describes a person who would be appealing to the members of the hiring department. Be honest and don’t oversell your accomplishments. A matter-of-fact approach does a better job of displaying your talents in any case. Hopefully these suggestions will help job applicants for college faculty positions to present themselves as effectively as possible, avoiding potential pitfalls while optimizing their potential for landing that desired job!

### **Appendix: What can you do to prepare before a job search?**

What if you are a year or more away from actually going on the job market? Here are some ideas about how you can prepare to be a better candidate for this type of search.

- 1) Develop your teaching abilities, using teaching assistantship opportunities or any other openings that arise. Keep a journal of your significant experiences and summaries of your teaching evaluations.
- 2) Make sure you get lots of experience giving scientific talks. Go to conferences, give talks at research group meetings or student-led seminars, visit other institutions and give talks, talk to local high school science clubs—there are numerous ways to develop your communication skills.
- 3) Train yourself broadly as well as deeply as a scientist. Stay away from too narrow a focus on any one set of research skills to the exclusion of general laboratory or theoretical skills. Attend colloquia (within and outside of physics), talk with other scientists and read widely in broad-based journals, such as *Physics Today*, *Physical Review Letters*, *Science and Nature*.

- 4) Make sure that you will be able to get letters from professors (or others) familiar with your teaching abilities, not just with your research.
- 5) Visit other institutions and conferences whenever possible and learn to network effectively. Try to visit and talk with liberal arts college faculty to learn more about their programs, so you will be educated about this option when you are finally on the job market.
- 6) Get a job that provides postdoctoral research experience if you want a liberal arts college job with a serious research component. You will be expected to generate your own research program, independent of your graduate or postdoctoral research, all while teaching and managing other commitments. Postdoctoral research experience is valuable in developing the experience and maturity required for such an undertaking.
- 7) Consider looking for a teaching postdoc—a new option offered by some institutions where you divide your postdoctoral responsibilities between research and carefully mentored teaching. When utilized properly, such positions offer the best of both worlds. Taking on temporary teaching positions may or may not be helpful in further job searches.
- 8) Talk with peers and alumni who have carried out successful job searches. For example, it is helpful to understand the timing of openings, so you will know when to go on the market. It is relatively easy to learn about job openings through ads in *Physics Today* and online services such as that run by the American Institute of Physics.
- 9) Attend job-hunting and professional skills workshops. If none are offered at your own institution, look into those offered at major conferences by the American Physical Society and other professional societies.

## Resources

*Landing Your First Job, A Guide for Physics Students*, John S. Rigden, Springer-Verlag, Berlin, 2002. Also available online at <http://www.aip.org/careersvc/resources.html>.

*Careers in Science and Engineering: A Student Planning Guide to Grad School and Beyond*, Committee on Science, Engineering and Public Policy, National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Academy Press, Washington, DC, 1996.

“Advice to Beginning Physics Speakers,” James C. Garland, *Physics Today*, July 1991, page 42. Also note the response: “What’s wrong with those talks?” N. David Mermin, *Physics Today*, November 1992, page 9.

Council on Undergraduate Research maintains a website at <http://www.cur.org/> that offers members and nonmembers information about various aspects of undergraduate research. Members can access information regarding funding resources.

The American Association of Physics Teachers has resources of interest for professors at primarily undergraduate institutions. You can learn more about their programs at <http://www.aapt.org/>. The American Institute of Physics maintains a website devoted to Career Services at <http://www.aip.org/careersvc/>

*Report on the Dual-Career-Couple Survey* by Laurie McNeil and Marc Sher at <http://www.physics.wm.edu/dualcareer.html>