

Tips for the Job Search: Applying for Academic and Postdoctoral Positions

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This article is the first in an occasional series intended for graduate students. The series is coordinated by Associate Editor Lisa Traynor.

—*Andy Magid*

When going on the job market for the first time, it is easy to feel like you are drowning in a sea of questions: When should I apply? Should I print my application on fancy paper? What is a standard “benefits” package? This article is based on our own experiences of applying for postdoctoral and academic positions, combined with our more recent experiences of serving on hiring committees. Certainly every story is different, but this article will attempt to answer the most common questions that we faced. Several other resources listed at the end can provide more perspectives.

Where Do I Find Out about Jobs?

The AMS has a Careers and Employment webpage at <http://www.ams.org/employment>. Jobs are added daily under the Employment Information in the Mathematical Sciences (EIMS) job listings, and there are also links to useful articles about hunting for jobs. Mathematics news publications, like the *Notices*, advertise positions in the back (some-

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times under Classified Ads) and will often list a slew of them around October or November. Professional organizations in the USA and abroad typically have a section for careers or employment on their websites where job and fellowship information can be found. Some postdoctoral positions are described in “Mathematics Opportunities” in the *Notices*; a more comprehensive listing of such positions appears in the September issue, in a special section called “Stipends for Study and Travel”. The *Chronicle of Higher Education* lists job openings on the Web at <http://chronicle.com/jobs/>; a variety of jobs are listed there, so read the ads carefully. Job notices may also be posted in a public place in your mathematics department and on the individual websites of the schools advertising for positions. You may notice the same job listed in several places, but some positions are advertised in only one location.

A relatively recent addition is MathJobs.Org (at <http://www.mathjobs.org/jobs>), a job application database developed by Duke University and sponsored by the AMS. As described in the introduction:

The system is free for applicants. Applicant data is confidential, unless the applicant makes it public to enrolled employers by selecting the “Free agent” choice on the coversheet. After registration and data entry, applicants can apply for jobs, keep track of applications, print out paper coversheets, and invite their reference writers to submit letters into the system. Employers can

conduct their recruiting entirely online, without setting up and maintaining their own servers and databases.

In [9], Cameron Sawyer adds, "Send an application to any school in which you are really interested, even if they don't have a job listing or don't seem to be looking for someone with your qualifications (be up front about this in your cover letter). Many people have successfully found jobs this way when a campus has an unexpected position open up due to a death, resignation, surge in enrollment, etc."

At times there has been the sense that a person should apply to as many jobs as possible, but our own experience is that it is better to focus on the 20-40 positions that seem to be a good match for you. This is not only for the sake of the schools that would be receiving your applications, but for your own sake: with fewer applications, you can spend the time to personalize each one. As a safety net, you may want to talk with your advisor about the possibility of delaying your thesis defense and doing an additional year of research in the event that your job search is unsuccessful.

Find some way of organizing your job-related materials (e.g., PDA, file folder, spreadsheet). One purpose of this is to be able to go back quickly to the details of a particular advertisement or school if you are contacted with little warning. Additionally, once you have been contacted by several schools, you want a way to keep all of the different information straight (e.g., the twelve credits per semester mentioned in the ad may be four classes with four separate preparations, or three classes with two preps).

What Do I Include in an Application?

An application would typically include some subset of a cover letter; your curriculum vitae, or CV; your graduate and possibly undergraduate transcripts; a Statement of Teaching Philosophy; a Statement of Research Interest; and anything else the school asks for. You can print these out on nice paper, but our experience is that regular paper is fine. It is possible to send these out in a regular envelope, but a large envelope is preferable: it is easier to read applications that haven't been folded, and at some schools the entire committee will read the original application materials rather than a photocopy. For the benefit of those schools that do photocopy materials, it is safest if everything is printed on one side only. Also be certain not to use too small a font, as you don't want your application materials to be associated with a headache.

For some applicants, especially those applying from a foreign country, it may be best to send materials electronically, and this is worth checking with the individual schools. Otherwise, all materials should be sent through the postal service unless

the ad specifically mentions that electronic submission is welcome.

Cover Letters: Include one with every single application. The cover letter should be about one page long, certainly no more than two pages. You should state what position you are applying for in the first paragraph, since some departments may be running several searches simultaneously. The main purpose of the cover letter is to convey your interest in the school and why you are a good candidate for the job. Some schools don't read the cover letters carefully, but many schools, especially smaller ones, treat the cover letter very seriously as it is one of the only places for both your personality and your particular interest in the school to come through. Generic language such as "at your college or university" may not go over well. In addition, if you are applying for a job far from where you currently live, it may be worthwhile to mention if you have a particular connection with or interest in the geographical area.

If you are interested in a research position, you should specify early on your area of research. Be sure to emphasize the large breakdown (for example, Geometry and Topology) as well as the particular subfield (for example, Khovanov Homology). Your graduate advisor or other members of your department can be quite valuable in suggesting schools that may be good matches for your research interests. In the letter, make sure that you identify why the school to which you are applying is a good fit for your research objectives. Be clear about any ongoing research projects you are involved with and any individuals or research groups at the school with whom you can readily interact. Obviously, this is difficult if you do not know anyone, so shed that introversion and go meet some people! Indeed, a very good way to give yourself an advantage is to take every opportunity to meet people in your field. This includes attending conferences, introducing yourself to other researchers, giving talks or posters, and making an effort to interact with colloquium speakers who visit your own campus.

The cover letter is also the place to mention if you will be at the Joint Mathematics Meetings (JMM) in early January and, if you are giving a talk there, to indicate the title and the time (if known). We do recommend attending the JMM as an excellent way for you to make both informal and formal contacts with people at the schools in which you are interested. If you are considering any nonpostdoctoral positions, the Employment Center is a valuable resource. Through your registration, participating schools will receive a booklet that has your resume in it, and schools to which you didn't even apply may choose to contact you for an interview. More information about the Employment Center can

be found on the AMS Careers and Employment website.

A word of warning: be certain to proofread a printed copy of your cover letter before you send it. It is remarkably easy to mix up letters when you prepare many at once, and a misspelled word may or may not be overlooked by the search committee. A cover letter that speaks to an incorrectly named position or that is addressed to the wrong school is very easy to discount as a misguided application.

CV: Include one with every single application. They are generally two to four pages long, though some may be a bit longer, and a running header is a nice touch. You should list your contact information (address, phone, email), undergraduate and graduate degrees together with the institution and year each degree was received, awards, fellowships, job experience (including a list of specific courses you've taught), papers, talks (including those in your department and to your local math club), and references. You should certainly include any committee work that you may have done, and you can also include undergraduate honors. If you are a U.S. citizen or otherwise authorized to work in the United States, you should state that as well. If you are applying for a research position, awards and fellowships should be on the first page; these show that people are willing to give you money.

If you're reading this a year or more in advance of your job search, you should be thinking of what you will be putting on that CV. In [1], Annalisa Crannell suggests

Volunteer. Go to departmental seminars. Go to conferences. Going to a local conference doesn't have to cost you anything—write a polite letter to your deans asking for a grant. They won't mind shelling out fifty or sixty dollars for a good cause. Getting grants, no matter how small, looks very good to employers. Giving talks to undergraduate or high school students is an excellent way to prepare for the bigger talks that follow, and it lets people know that you're out there (it looks good on your CV, too).

She also recommends keeping a folder ("Bragging") with everything that makes you look good (awards, invitations to speak, unsolicited comments from students). This can be helpful in preparing a CV or as references for your letter writers. It's also a good habit for when you prepare your tenure portfolio.

Transcripts: Yes, some schools require graduate and even undergraduate transcripts. Unless they specify official transcripts, you can send photocopies; in general, official transcripts are

required only of finalists. If you are in doubt, write to the school and ask. If a school doesn't request transcripts, or only requests graduate transcripts, it is up to you whether you want to send more (to demonstrate a liberal arts background, another area of expertise, etc.).

Statement of Teaching Philosophy: The goal of this is to give the search committee an accurate image of your classroom teaching, rather than a more abstract philosophical statement. If you use any buzz words (technology, group work, cooperative learning, undergraduate research), then emphasize your previous experience, and include specific examples: when you've used group work, what you noticed, what you might try differently; where you've used computers in class, what specifically you liked or would change. You may want to include your teaching statement with every application (unless an ad states "Send only") if you are trying to emphasize an interest in teaching. Again, a printed copy should be proofread carefully. You may even want to tailor this teaching statement to specifically mention the individual school, in order to show knowledge of the teaching expectations of the job for which you are applying.

Statement of Research Interests: For all statements of research interests, it is useful to first explain the main context of your research in terms that a nonexpert can understand. Include some key results in the field and emphasize your own contributions, keeping in mind that a search committee must read through many applications. If you are interested in a postdoctoral position, you will want to go into more detail about the specific research you have done. You should also give an indication of your future research plans: What will you do next, and do you have concrete plans for continuing your research away from the mentorship of your graduate advisor? If you are applying to a school that does not have a graduate program but does value undergraduate research, list some ideas of how undergraduates can be incorporated into your research. If there is a faculty member at the school who works in your area, be sure to mention any common points of interest and possibilities of collaboration. Have some of your fellow graduate students and your advisor read your statement of research interests.

Webpage: If you have a webpage, make sure that it is up-to-date and treat it as part of your application package. A photo of yourself on your webpage is a nice way to start building name-face recognition, although it is not necessary. A webpage where you've posted information about your courses (e.g., specific assignments) or highlighted important things you've done can be a real asset to your application, and in that case you should certainly include the address in your cover letter or CV. On the other hand, a webpage with outdated

information, broken links, or misspellings could work against you, as could a webpage that speaks exclusively of research when you have applied to jobs where you state that you are primarily interested in teaching (or vice versa). It is not unusual for prospective employers to do a general Internet search on candidates, and they may find your webpage or other electronic postings even if you yourself do not provide the information.

What about Letters of Recommendation?

You need at least three letters of recommendation. Four is better, and five is fine if they focus on different aspects of your qualifications. For many file readers, the letters are the most important part of the application! Give your letter writers a sample of your entire application packet. This way they can say things in their letter that support your case and are consistent with your own statements. Be absolutely *sure* they are clear about your career goals. Some schools request up to two letters that talk about teaching; the teaching letters should if possible be written by someone who has observed you. If you are interested in a postdoctoral position, it may be helpful to give those letter writers commenting on your research a little mini-lecture about your results. Even if you give them a research statement, it is always easier to explain in person your key results. Keep in mind that your letter writers might have contacts at some of these schools, too. You should never pass up a chance to work the “friend of a friend” angle if at all possible; while letter writers usually write only one letter for you that is sent everywhere, in this situation you may be able to request a personalized letter of recommendation for that school.

Ask potential letter writers now, and remind them in a month. Let them know the deadline for the letters, and give them, and you, some leeway with this. Only a few jobs have application deadlines before November 15, so you might want to request that everything be in by mid-October. If an office at your school sends out letters, you can check periodically to make sure that the letters have been submitted and sent out. You may have to address envelopes yourself; generally you will not include your name on the envelope, but might put a post-it note with your name on the top if an office is sending the letters. It should be clear what the deadline is, and you should allow plenty of time for them to be mailed (perhaps two weeks). Some schools don't care if the letters of recommendations are in on time. Others do, and your file could miss consideration at important search committee meetings if it is not complete. Your letter writers might not realize how early some deadlines are, so you may want to remind them as the deadlines approach if letters haven't been written.

When Do I Apply for Jobs?

Most deadlines are between December 1 and January 15. For nonpostdoctoral positions, it is very helpful to send in your application by mid-December even if the deadline is much later, especially if you will be at the Joint Mathematics Meetings in January. For schools that conduct interviews at the JMM, you are better off if you have already applied and the schools have had the chance to look over your application. In mid-December, you may want to email the schools and remind them that you will be at the JMM and would be happy to meet with them there. If you are giving a talk, this also lets you send them the title, time, and location if you didn't know those earlier. A short polite email, especially if you mention specifics about the individual school, may lead directly to an interview and is unlikely to bother anyone.

How Will I Hear from Schools?

For research oriented postdoctoral positions, you will likely receive an offer without any need for an interview. There is an effort to coordinate the timelines for such offers:

[A number of mathematics] departments in the U.S. have formally adopted an agreement to coordinate their earliest deadline for responding to postdoctoral job offers. This agreement specifically excludes tenure-track offers, and it applies only to candidates who are less than or equal to two years past the receipt of the Ph.D. The agreement attempts to address the problem that sometimes faces candidates for postdoctoral positions when they are asked to respond to a job offer by a certain date and this date is before the date of announcement of the National Science Foundation (NSF) Mathematical Sciences Postdoctoral Fellowships. (<http://www.ams.org/employment/postdoc-offers.html>).

Information on deadlines and departments participating in this agreement can also be found on this AMS website.

For other positions, many schools will email or call you at work or home to arrange a phone interview, possibly as early as December. Other schools will interview during the Joint Mathematics Meetings, either in addition to or instead of phone interviews. Prepare for these interviews in advance: look at the websites of both the school overall and of the specific department. Be sure to bring extra copies of your application materials to the Joint Mathematics Meetings. As a side note, do not assume that schools with religious names are

religiously affiliated (or, if they are, try to find out what that means for those schools). There is more specific information about interviewing, including questions to ask and expect to be asked, in [2], [3], [4], [6], and [8].

If there are special circumstances surrounding your job search (e.g., the two-body problem), you should also be thinking about whether this is something that you want to bring up and, if so, when and how. There are no easy answers to this. It may not be best to bring it up in the initial application, and some people feel that nothing should be mentioned until you are offered a job (and only then if it is relevant for negotiations). Heather faced the two-body problem during her search and found in her case it was best to bring it up during an initial interview, either by phone or at the JMM. ("My husband will be finishing his Ph.D. in mathematics in the next two years; are there other jobs within a reasonable commuting distance?") If there were other prospects in the area, which was usually the case, schools were happy to share information; likewise, if there were not, all parties were glad for the honesty before more time and money was invested. Another experience of a two-body search, along with myriad details about an academic search in general, is available in [10].

Federal Equal Opportunity Laws prohibit employment discrimination on the basis of race, color, religion, sex, national origin, age, and disability (see <http://www.eeoc.gov/> for details); the Civil Service Reform Act adds marital status and political affiliation (<http://www.osc.gov/ppp.htm>). Despite this, you may through willfulness or, more likely, through collegiality or ignorance be asked questions about these topics. If you are comfortable with the question then you can certainly answer; otherwise, with these or other inquiries that don't relate to the job at hand you can deflect the question. For example, if asked "What country are you from?" you might respond, "It's OK, I'm authorized to work in the U.S." The question "Is your wife an academic too?" could be redirected with "Is that a common scenario here?" Other personal questions might be simply responded to with "I don't anticipate any problems with the job requirements, if that's the concern."

What about the Campus Interview?

Starting in February schools will bring you out for a campus visit, which will typically last one or two full days (with 1-2 overnights). In anticipation of the time away, Kim Roth [7] suggests, "If you are going to be teaching in the spring semester try to find a person willing to substitute for you for all of your absences now, instead of over break when it can be hard to find people."

When you get a request for an on-campus interview, the school may make all the arrangements

or you may need to buy a plane ticket yourself and be reimbursed. In the latter case, ask if there are any special conditions for reimbursement. Once on campus you will be expected to teach a class, to give a talk, or perhaps both. If you teach a class, find out the level of your audience, whether you're expected to stick close to the book (if there is one), and whether or not you are expected to assign homework. If you are giving a talk, the question of audience level is particularly important. Are you expected to speak about your own research? If so, are you speaking to others in the field or to sophomore math majors? If you are able to choose your own topic, is your primary audience the mathematics faculty, the upper-class majors, or the freshmen still in calculus? Even if you don't give a talk on your own research, it might be possible to give one in the same general area, and you will be well-served if you are prepared to talk a bit about your research at a level that the sophomores can understand. Practice your teaching and your talk at least once with an audience, carefully proofread anything that will be printed or shown, and have back-ups for any technology that might go awry. Even if you are giving a research talk, be aware that you will be judged on your communication skills. Being clear and organized is as important as the mathematical content. While you should leave time for questions at the end, have some additional comments prepared in case people are hesitant to speak up.

You will meet with some administrators and human resource personnel during a campus interview to discuss salary and benefits. Some basic information about salaries can be found in the *Notices* in February and August in the First and Second Reports of the Annual Survey; this information is also available online at <http://www.ams.org/employment/facsal.html>. You will probably get health insurance (it may not include vision and dental) and retirement benefits. The way retirement plans typically work is that you put aside some of your salary pre-tax (2-5% seems standard), and the school will then put in some percentage (7% seems low, 8-9% seems average, 10% and above seems good), although the schools might wait one or two years before contributing. A small number of schools offer post-retirement benefits, allowing you to partake in group health insurance after you retire. This is a wonderful thing, but not very common anymore.

You will also meet with many faculty members, who can answer any questions you still have or clarify information for you. Find out about the teaching load (how many credits per year, how many courses that translates into, and how many different preparations you would have each semester). Ask about tenure and promotion; these often go hand-in-hand, but at some schools promotion

may be competitive. Likewise, ask about the opportunities for taking a sabbatical (e.g., Is it competitive?). You should also inquire about travel funds: these may be automatic, or may need to be negotiated. Even if travel reimbursement is fixed, you may be able to get additional support for a specific request such as participating in Project NExT (see <http://archives.math.utk.edu/projnext/>) or for giving an invited talk. One or more course releases when you start may be standard or negotiated. Ask if the school pays (some) moving expenses, and whether there are funds for you to buy office furniture or if the furniture is provided.

Some departments or schools will give new hires a standard package for computer equipment, but others expect you to ask for anything you need including a new (as opposed to used) computer, a printer, a scanner, etc. Find out how this works and ask faculty in the department what they recommend, because it can be more difficult to acquire anything in later years. While you would typically not do any actual negotiating until you have an offer, the on-campus visit is a good place to find out what is negotiable. Later, when you do get an offer, don't shy away from polite negotiation and be up front about any time constraints; everyone knows this is part of the process. Also, your direct negotiator is often a department chair who will not mind making your case to their dean (who generally controls the purse strings).

Keep in mind that your faculty host is often your biggest fan on the hiring committee, so treat them well and attend carefully to any advice they can give about winning over their colleagues!

Finally, be sure to thank everyone for every interview, whether the interview is by phone, at the Joint Mathematics Meetings, or on campus. (This thanking can be done on paper, or with a personalized email.) And then wait for the offer.

Good luck!

Portions of this article were adapted from "Questions I Don't Know the Answer To" by Heather A. Lewis, posted on the Young Mathematicians' Network.

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