# “So you want to be a graduate student?”

by Andrew Rutenberg, Sept 2007

Congratulations! You’ve lined up graduate school with a well-funded supervisor in a growing field. You have an interesting research topic, a top-up to the base stipend, and you are starting in June to get a head start on research before your graduate courses start. Your local mentor thinks you are making a good choice, and other people in your chosen field have good things to say about your future group. You liked what you saw when you visited, you think you could have a good working relationship with your supervisor, and their other graduate students seem excited about their research (if overworked).

No? There are things that you can start doing as early as your first year undergrad to help you decide whether and how to continue on into graduate school. Even if you are only starting to think about this in the last term of your last year, a few hours of legwork and digging can significantly improve the next few years of your life --- and position you better for your future career.

Start with some inclinations about where to go, what to do, and who to do it with. Spend an evening of web surfing to various physics departments to get some/more ideas. Most Canadian graduate schools match students with professors prior to acceptance, though some have the American pool system where the match occurs after your initial course-work. For the match schools you should be identifying individual research programmes, for the pool schools you should look for attractive research clusters. Then ask professors active in research in your department to comment on your list: where, what, and who are you missing?

Talk with local profs and grad students about their research. Their enthusiasm can be infectious, and they’ll often be happy to chat about non-course related matters. Some people in your undergrad department may try to convince you to stay for graduate school, and staying can be the best option for personal reasons or if you want to work with a newly hired prof who brings an outside perspective. Be wary of letting inertia decide: explore other departments.

While you can pick fields based on your favourite undergrad courses, a lot of interesting research directions are not in the curriculum. Some of them may not even be explored by profs at your university. Try to meet with seminar speakers (e.g. along with classmates over pizza or doughnuts) to pick their brains about where, what and who to work with. Try to distinguish fields that are interesting from ones that are also growing or that feed into careers you would find interesting. If other areas of science interest you, this is a good time to seriously consider them. Even with a basic physics training, you can bring a lot to another field!

When you’ve narrowed your options down to a top 10 profs or so, do more digging. Look for their recent publication history in ISI Web of Knowledge (ask at your library if you need help with it), including how well-cited their papers are. While they may not mean a lot to you at first, you can bring them to a local prof involved with research for comments.

Start emailing your top choices to see what projects they may have in mind for a new student. If you are an A student, have fellowship funding for your graduate studies, and/or have research experience then mention it! Finally, apply to your top choices that you feel good about. (You can always ask profs to write you letters of reference even if you don’t know them well, since they can chat with you and read your CV and transcript.) Arrange a visit to every group that accepts you, unless you already know that you won’t say yes to them. Decide.

If you are starting at the last minute, be aware that application deadlines for smaller schools are often flexible. If you have another year or more, then try to get a summer research job to test the waters. Apply to people across Canada that you are interested in, both to maximize your chances and to broaden your horizons.