

If I Were Starting Over...



Stanford Physics and Applied Physics

2010

Dear first-year graduate students,

The Federalist Papers. Poor Richard's Almanac. The PDG Particle Physics Handbook. And now this.

Many great works started life as simple pamphlets. Contained in these pages is the collective advice of many generations of Stanford physicists-in-training, garnered at great cost through many years of toil (research) and tribulations (quals). These are their answers to the question: "What would you tell yourself if you were starting graduate school over again?" Heed their words, and when the time comes, remember to pass on your wisdom to the next generation.

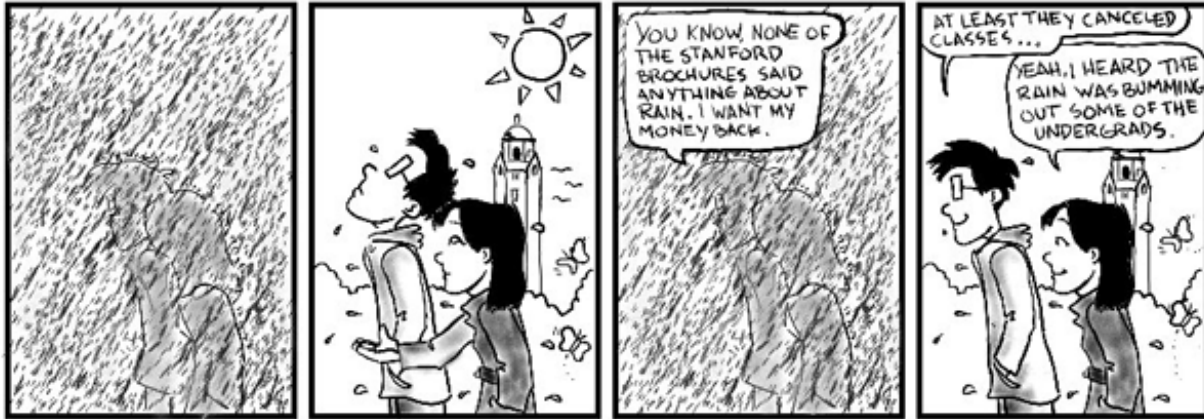
Best wishes,

Chihway Chang	Ken Soong
Christian Perez	Ahmed Ismail
Kyle Watters	Joel Frederico
Wells Wulsma	

~~2009~~ Starting Over committee
2010!

**[DON'T DO MORE WORK
THAN YOU HAVE TO]**

Life at Stanford



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"Piled Higher and Deeper" by Jorge Cham - www.phdcomics.com

- You can get groceries using the Marguerite Shuttle. The SLAC line stops by Safeway and CVS. The Shopping Express stops by Safeway, Whole Foods, Target, and Walmart. And the B-Line stops by Trader Joes and CVS.

- Applied Physics Grad
- Fun places in the area to visit include Big Basin (redwoods), Point Reyes (elephant seals, lighthouse and grey whales), John Muir woods (also redwoods). University Ave. in Palo Alto is all right but not a great student hangout place. Good places to eat include Fraiche (frozen yogurt), Pizza My Heart (as it sounds), Tapoica Express in Mountain View, (bubble tea) Guan Dong House in Cupertino (excellent Chinese food). There is a nice farmer's market on California Ave. and El Camino on Sundays from 10-12; there is a Mexican stand and a crepe stand which are good for lunch.

- High Energy Grad, 4th Year
- Guide to campus coffee:
 - +Bytes coffee is \$1 if you bring your own mug.
 - +Coupa coffee often is better quality than Bytes, but it costs a little more too. Look out for Coupa coupons in the Wikitreedia - I didn't pay for coffee once during my first quarter (pro tip: grab like 10 copies of the Wikitreedia for the coupon section).
 - +Awful coffee is only 50 cents at the bookstore.

- Physics Grad, 2nd Year
- Don't isolate yourself. It's easy, but you'll be less crazy in the long run if you get out of your apartment and talk to people outside of research and classes from time to time.

- Astrophysics, 2nd Year

- *If I were starting graduate school over again, I would go for more walks, runs, and rides in the hills during my first year. I'd make sure to stretch, especially before running.*

- Kam, Condensed Matter Experiment Professor

Rotations and Research

STAND BACK



**I'M GOING TO TRY
SCIENCE**

xkcd.com

- Rotations in High Energy Theory tend to start as a reading course but it is a good idea to get involved in actual calculations: this will give you and the professor a better idea of what it's like to work together and whether you wear well.

- High Energy Theory Grad, 4th Year

- 1. Find an adviser that you really like and can interact with very often!
2. Find the project that you think will solve the most important problem in the world.

- Astrophysics Grad

- I'd say there are two things I'd wish I'd done differently:

1. A couple weeks or reading can save months of experiments. You'll always have pressure to "just get things done" but taking the time to really understand the past work, including the nitty gritty details, makes all the difference in the world.

2. It's never too early to think about exit strategies. Projects fail all the time, try to hedge your bets somehow.

- Physics Grad

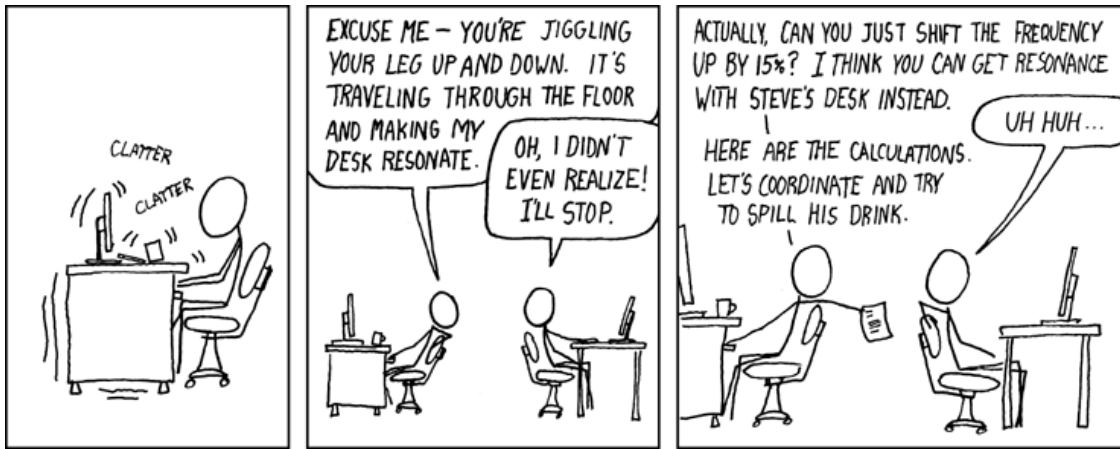
- First and foremost, follow the instructions on the back of the Hitchhiker's Guide to the Galaxy: Don't Panic. Also, breathe from time to time. It does help. The professors, post-docs, grad students and staff are more likely to be friendly and willing to answer questions than to try to eat you. And do ask questions; you'll spend a lot more time confused and frustrated if you don't.

Make sure you get along with the research advisor you choose, and make sure you understand their expectations. Again, ask questions as needed.

- Astrophysics, 2nd Year

- In your first year, rotate with professors in very different fields. You'll see what science is going on at Stanford and really know what it is you love to do.

- High Energy Theory Grad, 4th Year



xkcd.com

- When choosing a group, most incoming students know to make sure that their personality is compatible with their advisor's personality. I would advise students to consider the personality of anyone they might work for underneath the professor (research associates, staff scientists, postdocs) as well.

- Anon Grad

- The most important decision you will make in your Stanford career is which research group to join. I wish I had spent more time talking to senior graduate students before making that decision. Older graduate students are in a unique position to explain the pros and cons of various advisors and subfields of research. Meet them outside lab – at lunch, Physics Beer, or on the bike ride home – and ask them if they would join the same group again if they were starting over. They will likely have some gems of wisdom for you.

- High Energy Experiment, 7th Year

- Outside of the Phys/AP department there is a lot of interesting work going on. Take the time to search outside of the department - you might find an incredible project that could use a physics student!

- Anon Grad, 4th Year

- Your advisor: Make sure you like your advisor. You'll need advice, don't be shy about asking for it. Also keep in mind that you're at Stanford; becoming a tenured professor at Stanford is like being touched by God, and that tends to impose some selection bias on who the professors are, what they do, and how they do it.

Research groups: Make sure you like your research group. This is at least as important as liking your advisor.

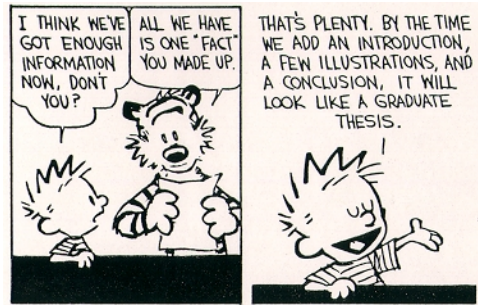
At work: Don't work too hard, take time off once in a while, and have a good time. Step back once in a while and ask yourself if what you're doing is worth the effort; maybe another approach would be better.

Most importantly, don't burn out. While you might be capable of writing your entire dissertation in 1 month, it's not worth it if doing so leaves you depressed and unmotivated for the subsequent 12 months. Trust me.

- Atmospheric Physics Postdoc (2009)

- Graduate school is the best time to learn and to do research. The most important question you should ask to yourself is what exactly you are interested in.

- Anon Grad



Calvin and Hobbes, Bill Watterson

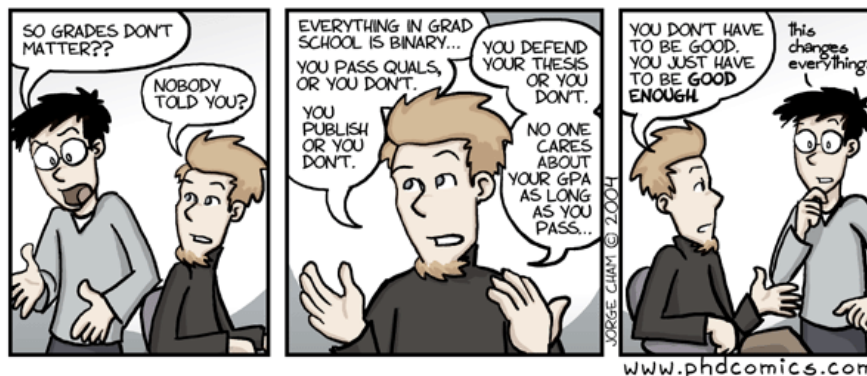
- As far as research advisors go, the reality is that you never will find the ideal advisor just like you won't ever find that ideal girl (or guy). So use your discretion and best sense of judgment and go for it and hope for the best. You may get rejected, but eh whatever, it's part of the fun.

- Captain S, Applied Physics Grad, 4th Year

- *Look for a group at the cutting edge, where you can be the first to see something new. Also, look for a group that you feel comfortable with, and check with present grad students to learn about the chemistry.*

- Anon Physics Professor

Academic



"Piled Higher and Deeper" by Jorge Cham - www.phdcomics.com

General

- Now is the best time you'll have to try something new. You won't fall behind if you switch fields to something you really want to do. You have to be passionate about what you do.

- Anon Grad

- For PhD candidates (vs. masters): Don't worry as much about coursework as you did in undergrad. Your grades don't matter as much, and practically everyone gets A's and B's. Rather, you should focus on starting your research, since it is what the academic world really cares about.

- Applied Physics Grad, 2nd Year

- Go to library orientation. I forgot and regretted it. Mainly, you just need to go to get after-hours access. But nobody explained that.

- Anon Grad

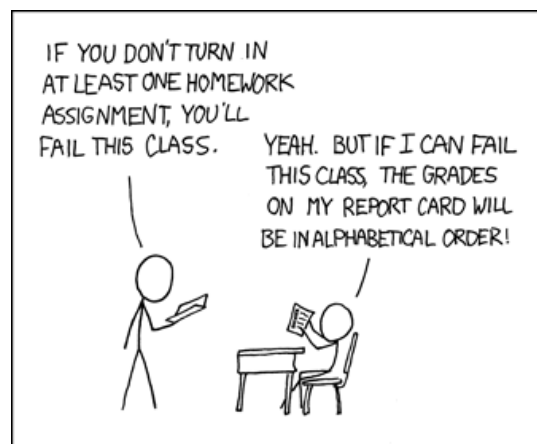
- Start finding a rotation lab at least 2 weeks before the (quarter) starts.

- Biochemistry Grad, 5th Year

- Your future: Know that becoming a professor is *extremely* difficult, takes years, and more often than not ends badly. Know also that becoming a professor isn't your only option. Physics is broadly applicable, and you'll graduate with a damn good analytical mind and the mathematical tools to back it up, so you can do pretty much anything you want; don't limit yourself.

-Atmospheric Physics Postdoc (2009)

Classes



xkcd.com

- Don't feel pressured to take 3 courses a quarter, especially your first quarter! You can take 2 courses each quarter and still meet all the deadlines with quarters to spare. Of course, meet the 10 credit/quarter quota though.

- Anon Grad

- Take as many of the required classes as you can first year. Then you can focus on them, whereas in later years you will want to be focusing on research.

Don't be afraid to ask lots of questions during your research rotations.

- Condensed Matter Theory Grad, 4th Year

- Be open-minded about research and friends. Find a nice comfortable niche of friends you can have lunch with regularly after class. Since you all share the same concern about finding that ideal research advisor that suits you best, this niche of friends will provide a combination of camaraderie and psychological relief that makes you treasure the graduate school experience. Also, there'll always be a few super brilliant friends in your group that can solve all the homework problems perfectly which is a good thing since we know 'friends let friends drink and NOT drive.' Enjoy the combination of classes and research and just a little bit of extracurricular if you can fit it in. I assure you, the storm will clear.

-Captain S., Applied Physics Grad, 4th Year

- At class: Understand the material, but don't worry about getting A's; grades don't matter. You won't remember the equations in a year anyway (unless it's your research area), but be sure to get the big picture.

- Atmospheric Physics Postdoc (2009)

- If you are thinking of doing High Energy Theory, do not be disappointed at the level of the graduate courses offered - most of the instructors do not put much effort into teaching. Do your best to learn by yourself the things you are supposed to know.

Do not be shy or intimidated if you need to talk to a professor. I came to learn that boldness is a very good thing to have in grad school.

Think very carefully about the supervisor and the group you'd like to work with. It's better to be with a not so famous supervisor that will care about you than to be with a superstar that will ignore you.

-High Energy Theory Grad

- Take it easy and don't overload yourself with too many courses - just two serious ones a quarter is grand.

- High Energy Grad, 2nd Year

Paperwork

- If you want to waive a course, get it in writing, or find out that you can't, as soon as possible.
- *Maintain good communication with your faculty advisor(s). Try your best to complete all of your milestones on time. Milestones are established to help keep you on track to degree completion, so if you don't do your fourth year oral presentation until your sixth year...well...you get the drift. Go to Tuesday colloquium (for knowledge AND for donuts!) Don't get too bogged down by the paperwork and bureaucracy, but realize that if you don't take care of requirements (registering for classes, submitting financial aid forms, etc.) in a timely manner you will only add to the paperwork and bureaucracy which will increase your frustration.*

- "Physics PhD Student Behavior" (Student Services Officer), Maria Frank, 10.5 Years

Physics



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- **STUDY FOR THE QUAL!**
- "Physics PhD Student Behavior" (Student Services Officer), Maria Frank, 10.5 Years
- *Welcome to the Physics Department! Physics staff is a friendly bunch. We are here to support you. Nothing is too trivial for you to ask. Except Physics, feel free to discuss anything with us. We don't have all the answers but we can point you to where you can get it. There's always cookies in the Main Office cookie jars. When you stop by, take some and leave some for the others. Physics staff strives hard to make your academic career at Stanford a very pleasant experience. Do show your appreciation for our efforts once in a while. A simple "thank you" will mean a lot to us. We wish you lots of success in your academic and research endeavors!*
- Rosenna Yau, Admin. Service Manager

Applied Physics

- *And from the Applied Physics Side of Stanford: We welcome you to the Department and to Stanford. We are here to support you through each step you will be taking to obtain your degree. We hope to get to know each of you as a person, not as "just a student", so do stop by anytime to say hi or to discuss any concerns you might have. We don't have cookies, but we have chocolate covered nuts and other such things now and then as well as always a smile. Welcome aboard as you start the next chapter of your life. We are here to help you write it.*
- Claire and Paula, Applied Physics Administrative Staff

Finally...



Calvin and Hobbes, Bill Watterson