

Grad Student Presentation Nevis Retreat 2017



Representatives from Physics Graduate Council
(Albert, Geoff, Heather, Laura, Nate, Roman)

On behalf of the graduate students

Outline

1. What is the Physics Graduate Council?
2. Open Thesis Presentations
3. Advising Committees
4. General grad student issues

Who are we?

- Physics Graduate Council (PGC) serves as a provide a formal and direct link between graduate students and the Physics Department and professors
 - Members: Roman Berens (president), Laura Havener, Geoff Iwata, Albert Law, Heather McCarrick, Nate Saffold
- The PGC unites different graduate student initiatives and leadership roles within the department.
- The PGC was started as a result of discussions last year at the Nevis Retreat!
- What we've done so far:
 - Regular meetings with faculty and graduate students
 - Improvements made to visit weekend
 - Welcome party for graduate students
 - Working on a proposal for open thesis committees and advising committees with Graduate Committee

Open Thesis Presentations

- Benefits:
 - Allows you to share your research with the Physics Department
 - See thesis presentations before giving your own
 - A (successful) defense should be a celebration and marked by the whole department.
 - Done at peer institutions and other departments at Columbia like astronomy and chemistry
- Representatives from the PGC met with faculty on the Graduate Committee this week to discuss
- Current proposal
 - Open thesis presentation with closed “defense” afterwards
 - Questions from audience and committee allowed throughout but more “probing” questions reserved for “defense”
- Next steps
 - Solidify proposal with Graduate Committee
 - Faculty vote and graduate student vote on proposal

Advising Committees

- **Benefits**

- Check on student progress through later years
- Advising/professional development for students
- Better recommendations opportunities
- Basis for Thesis Committees

- **Proposal Basics**

- Student has 3-4 person committee (including advisor) formed at end of 3rd year to meet with and discuss thesis proposal in 1 hr session with accompanying written report by student.
- Annual meetings in subsequent years to check dissertation progress and professional development. Also an accompanying report required.
- Reports are signed off by faculty and filed with department.
- Committee can form the basis for the thesis committee.

- **Next Steps**

- PGC representatives are currently working with faculty graduate committee
- Completed proposal will be voted on by faculty and graduate students

Giving Due Thanks

As a result of discussions at last year's retreat:

- Communication between faculty and students on how exams should be graded has improved.
- Happy hours are still happening and have a bigger budget.
- The PGC exists!
 - Progress on Open Defenses and Advising Committees
 - Department chairs worked with us to create better activities for the Revisiting student weekend and also to implement a beginning of the year party for the graduate students
- The Quality of Life committee was formed and is working with the PGC.

Teaching - Thanks

- Many thanks to Professor Dodd, who has been very receptive to student feedback and has worked to improve the 1201/1202 lab manual.
- Additional thanks to the current preceptors, Davio, Deivid, and Sun, for improving the feedback to the first-years and generally being very active.

Teaching

- Grading is often done by students completely unaffiliated with the course.
 - A system where the TAs who hold recitations handle the exams makes more sense. (Assuming there are enough of them).
- The regrade system serves to benefit only those students who are willing to fill out the paperwork. It would help if faculty made it clear what constitutes a mistake on the grader's part.
- It would help to have more frequent communication between recitation TAs and professors to ensure that TAs represent the professor's idea of how the class should be run.
 - This requires the TAs to be proactive on checking in with the professors as well.
- It is very difficult to find a room in Pupin in which to hold a recitation or office hours. Is there a way to give physics (and astronomy) a preference over other departments?

Teaching

- Multiple 1201 and 1202 lectures mean students are often in different places in lab.
- More generally, graduate students would really benefit from teaching actual recitations, as they can actually learn to teach physics (an important part of the PhD), but the lab structure makes that difficult.
 - The current TA meetings really only help students learn how to teach the labs.
 - Many students would not feel that they have time to teach a section on top of lab and grading.
- We understand that this is a larger structural issue that will be difficult to change, but some more manageable suggestions might be:
 - Hold 1201/1202 lectures in larger lecture halls.
 - This would also free up a few faculty.
 - Reduce number of lab sections, especially in 1493/1494.
 - There are several sections with fewer than 15 people.

Teaching - Payment

- Payment for teaching anything other than lab is completely unknown at the start of the semester.
 - More people would teach if they were told up front how much they would make.
 - We know the payment depends on the size and difficulty of the class and that there are various bureaucratic complications, but even a rough estimate would be great.

Website

- The website is one of the public faces of the department, and as such should be informative and usable.
- It is a key tool for recruitment.
- Issues include:
 - **Research Introduction page:** many professors are missing, some former professors are still listed, and some emeritus professors are not listed as such.
 - **Introduction page:** some professors are listed here but are not listed on the pages for the various subfields. This is particularly bad in the Theoretical Physics Faculty page.
 - **Special Events page:** Most recent event was in 2015.
 - We still haven't found the Higgs boson, despite having an additional year!

Website

- Issues (con't):
 - **Courses page:** broken: [Link](#)
 - **Undergraduate and graduate courses:** listed in no order, on the wrong pages, and are generally badly presented and even inaccurate. [Link](#)
 - **General:**
 - i. Aesthetics - many pages look unprofessional
 - ii. Pages are redundant or contain misinformation.
 - iii. Usability is very low.
- The website has come up many times before. How can it be fixed? *Is there someone who can be put in charge of fixing and then maintaining it?*

Classes

- **Course offerings**

- Many students would like some courses offered more regularly.
 - e.g., general relativity, scientific computing, cosmology, nuclear physics, advanced math methods
- Interest in courses that are not currently offered.
 - e.g., string theory, grad-level mechanics, quantum information
- How do grad students let the dept know of their interests outside of this retreat?

- **Course structure**

- Graduate classes could benefit from having recitations or problem sessions.
 - At least having an opening for a TA could work - many students would enjoy leading a recitation for a class they've taken.
- Make students aware that there are many relevant classes in other departments as well.

Quals

While many of us found studying for quals to be useful, if painful, several issues remain:

- **Revisiting the model:** Is it possible to revisit the model, especially because competing institutions are changing their quals?
- **Transparency:**
 - In the current form, there are many questions grad students perpetually have:
 - What fraction correct does it takes to pass?
 - Do some sections matter more than others?
 - Does some percentage always fail?
 - How much do oral exams matter?
 - How often are people asked to re-take individual sections?
 - What are other factors determining whether students pass or not?
 - *Or, if there are no answers to these questions, we'd like to know that explicitly too!*

Quals

- **Level:** The department website says “The Qualls is a test of undergraduate level physics.”
 - This has not been our experience, as many of the problems are very clearly grad-level.
 - Easy suggestion: modify this wording!
- **Review sessions:**
 - It would be very helpful if review sessions with a second-year start much earlier
 - The instructor should be tapped in the spring or summer.

Are there systems in place to help students who fail?

Infrastructure

We realize Pupin is a historic (old) building, but there are issues that we feel can and should be addressed:

- **Security**
 - Replacing old locks with new ones and not leaving it up to the individual office occupants or professors to do so.
 - Recent computer thefts
- **Safety**
 - Very few updates on building work. When major or extended construction is happening, it would be beneficial to have weekly updates.
 - No restrictions on or notifications when transporting dangerous items or compressed gas in elevators.
- **Aesthetics**
 - Graffiti in classrooms
- **The good:** The Theory Center remains great!

Department Activities

- **Graduate student seminars & happy hours**
 - Have been a great addition to the department; improved the grad student culture
 - Many thanks to **Geoff & Angelo** for organizing them for the past 2 years
- **Colloquia**
 - Graduate student attendance is low
 - Logistical issues: Bad time, bad room
 - Solution: Better time, better room (329 for colloquium, Theory Center for Wine and Cheese)
 - Cultural issue: Grad students don't go but not many others do either
 - Solution: Faculty should also lead by example and encourage their group to go together
 - Other possibilities: Can graduate students get involved in organizing the colloquia in some way?

Tax Bill

- The House tax plan, which has passed, would eliminate the tuition deduction for graduate students.
- For some numbers:
 - Current income is \$36,360. Estimated taxes are \$3,700.
 - Tuition and fees combine to about \$50,000. This would raise taxes to about \$13,000.
- Needless to say, this would make grad school essentially unaffordable.
- The Senate plan does not currently have this provision, but it could be added during the reconciliation portion of the process.
- Is there a plan in place if this passes?

Intellectual Focus of Department

- Things that prospective Graduate Students may find attractive:
 - Strong Theory and Experiment collaborations (eg. Nuclear Physics group)
 - Focusing on collaborations between research groups in specific subfields (e.g. creating “Columbia Center for _____ Physics”)
 - Lab space/infrastructure in Pupin (e.g. State-of-the-art Machine Shop, Clean Room)
- Fields that are exciting to Graduate Students:
 - Gravitational wave astronomy, biophysics, quantum information, quantum computing, particle phenomenology, complex systems
- Up-to-date faculty research profiles will help inform prospective students!

Final thoughts

- **Diversity:** more is needed in the department at every level
 - We think more active advising and fostering a better graduate community will help create a more welcoming environment in general.
 - But fundamentally, the faculty control the makeup of the department at nearly every level.
 - If efforts are underway to increase and support diversity in the department, can they be communicated to the students?
- **Taking action on concerns brought up during the Nevis Retreat**
 - Many of these concerns are the same as previous years.
 - The PGC can advocate for grad students, host events, give input to faculty, etc.
 - We have worked with the faculty Quality of Life and Graduate Committees on issues like this. **But....**
 - Help is needed from the administrative and faculty side to make sure many of these concerns are addressed (website, infrastructure updates, misc. maintenance, computer lab issues).
 - Is there a point person(s) we can identify to help address and make sure issues like these are resolved?

Thank you for your time.