



Spring Physics Career/Graduate Town Hall

What this year's graduates wish they had known.

Your Physics Career at WVU

- Early Physicists (before you complete Physics 112)
- Mid-Career Physicist (not any of the other categories)
- Real Juniors (will graduate by summer next year)
- Real Seniors (will graduate by this summer)



Early Physicist

Before completing Physics 112

Learn to be a Successful Student

- Research is important but learn to be an effective student first.
- Get mostly “A”s in all your classes, especially math and physics classes.
- Make yourself at home in the building – get a key to the undergraduate physics lounge and use it.
- Join the Society of Physics Students (SPS) or the WVU Astronomy club (or both) and attend some events.

Get to Know Your Physics Professors – Attend Office Hours

- Dr. Miller, Tu, and Stewart teach 1000 students a semester. Unless you make an effort, you are just a face in the crowd.
- Come to office hours and talk with your professors.
- I have had to decline letters of recommendation for “A” physics students in Physics 112 because I simply didn’t know them. A professor cannot write an effective letter of recommendation for a student based on a grade only.

Make Sure Your Adviser Knows You

- Develop a relationship with your physics adviser. Discuss your goals, challenges, and concerns. Ask about various career paths and advice on selecting a research adviser. If you are not getting what you need, request a change in adviser.
- Your adviser is not always your best letter of recommendation but they should be a possible letter. They must know you as a person to write the letter.
- From a current SPS leader, after 4 years his or her adviser did not know him or her well enough to write an effective letter. They had to use a letter from another institution (REU).

The Temptation of Double Majors

- There is a lot of time left in your undergraduate career. Should you consider a minor or double major?
- Yes. If you are considering a career path and additional course work would formalize skills.
- Yes. If you are considering graduate school in the second major.
- No. If the second major will substantially lower your GPA.
- No. If the second major will prevent you from fully participating in a research experience.

When to start research?

- Once you are being successful in classes and have developed connections with the department and fellow students, you can start thinking about finding a research group.
- Remember, research takes time (~10 hours per week) so it takes time away from academics. If starting research too early lowers GPA, it was a mistake.
- As an Early Physicist, there is not pressure to select a research group at this time.
- The SPS suggests the SURE program at WVU as a possible research experience the summer after freshman or sophomore year. (It is not as hard to get into as people make out).



Mid Career Physicist

After completing Physics 112, but not yet a real junior or senior.

The middle years

- Continue to be successful in classes.
- Continue to develop relationships with your professors and advisers.
- Have a presence in the building.
- Select a research group.
- Consider a leadership role in the SPS or the astronomy class.
- Apply for a Research Experience for Undergraduates (REU) or an internship for the summer (I will discuss these in the fall).
- Start thinking about your career – what you want to do after graduation.

Jobs Outside Academia

- It is not actually likely that anyone at WVU will become a professor at a research focused university (although I just heard on one student who did). Statistics say perhaps two of all current physics students will end up as professors.
- Even if you get a PhD, you will probably work in the private sector.
- This talk discusses physics careers in general [here](#).
- This talk discusses finding a physics job [here](#).



Real Juniors

Will graduate next year.

One year to graduation

- The general and physics GRE are discussed [here](#).
- Graduate School Applications are discussed [here](#).
- The job search is discussed [here](#).



Real Seniors

Will graduate now.



Graduate School

What is it like?

Graduate School

- Graduate school will be one of the best times of your life.
- You will enter with a cohort of students passionate about physics.
- You will all take the same classes and prepare for the qualifying exam.
- All physics graduate programs teach the same stuff, so if you get into a great program it won't be tons harder than a weaker program.
- Most will TA for large introductory classes the first year.
- Most will join a research group after the first year and no longer have to TA.
- It will take you about 5.5 years to graduate. Enjoy them.

Qualifying Exam

- Most graduate programs require you to pass a Qualifying or Candidacy Exam to advance to a PhD.
- This exam usually tests mechanics, E+M, and quantum at the first year graduate level.
- Most programs give you 2 attempts at each topic with a free attempt as you enter.
- Consider preparing for the free attempt and getting some of the qual out of the way as you enter.



Jobs

What is it like?