Visiting Graduate School

by Linda Watson

Here are a few tips on how to get the most out of your graduate school visits. You’ve only got one or two days to get a feeling for a department and your decision will affect at least the next five years of your life. Having said that, most graduate students assure me that the best way to choose a school is to just go with your gut feeling and you will rarely be led astray.

But for those of you who want a little more advice, here’s mine. I think your most important task when visiting schools is to determine whether there are a good number of faculty members with whom you could see yourself working. For astronomy departments, I’d say “a good few” is five, but that number might be different in physics departments where there are more professors, but likely also more students. This advice certainly holds if you are still shopping around for your perfect-physics-focus, but might also apply even if you are dead set on a very specific area of physics and already know the one person with whom you will work. Leave some room for fickleness!

Taking notes on all the research projects you hear about might be a little overwhelming, especially after you’ve listened to tons of descriptions (a bit a caffeine in the morning can go a long way!). So, just write down everyone’s name you talk to, listen to their research spiel, and write down “yes,” “no,” or “maybe” to indicate whether you could work with them. You’ll listen to a lot of people talking, so it kind of helps to either look up the professor’s mug shot when you’re reading back over these notes, or write down distinguishing characteristics (one of mine was “he swings in his chair!”). It’s always good to put the face together with your assessment.

And, just some final tips:
1) Make sure you understand the financial situation. Understanding whether you’ll be supported as a TA, RA or by fellowship, whether health care is part of the package, and the typical cost of living in the city are all necessities.
2) If possible, don’t visit the department during the big visit weekends when all the prospective students come. You get a better feel for the “real” department if you can just go around and talk to people rather than listening to presentations. Visiting alone is impossible in some cases and more exhausting, but I’ve preferred it.
3) Go to a campus newspaper if the university you’re visiting puts one out. You might find something interesting about the town, or maybe you’ll see a front-page article about the graduate student instructors protesting for better pay and health care.

Now that I’ve spouted on about these things to ask and take into account when you’re deciding, I have to tell you again that your graduate school decision should simply be based on where you think you will be happiest for the next few years of your life. I’ve been told in astronomy, there is no correlation between where one receives his doctorate and whether he will stay in the field. You can do good work wherever you go to school, and you really cannot make a bad decision here. Of course, far be it from me to stop you from making a huge spreadsheet of data for each school, applying complex numerical values to a variety of factors, and completing an intricate mathematical calculation to arrive at the best graduate school for you. Just make sure your gut feeling has some weight in your calculation.

Here are some typical questions to ask during your visit (many of these are courtesy of Desika Narayanan from the University of Arizona)

1) What is the student to ACTIVE faculty ratio? This is really hard to figure out from websites. People may have done some really cool stuff but either have shifted their focus or don’t work with graduate students. Ask both graduate students and faculty this question.
2) What’s the broad schedule for your graduate school? Most will answer that you start off with two years of classes, take a qualifying exam, and jump right into your thesis.
3) When do students get into research? How many projects do students typically work on before they choose a thesis topic? This is important if you’re in the “shopping around” category.
4) Where have recent graduates gone for post-docs or other jobs? This can tell you how other institutions feel about the department you’re looking at.
5) What’s the worst thing about the department? Ask a few people this. If you get varying answers, that’s not such a great thing. If you’re brave, you can ask faculty this question, but I’ve stuck with just graduate students.
Restaurant Reviews

by Joe Gleason

A few months ago, I had a conversation with a fellow physics student about restaurants I recommended in Gainesville. Being one who recoils at the idea of preparing my own food, it seems I had eaten at nearly every restaurant in Gainesville by the time my undergraduate work was finished. My colleague suggested I share this knowledge with those who have yet to discover some of the great eating spots of this town.

Hogan's
(formerly known as Hogan's Heroes before the lawsuit)
$3-$6
13th St. in the Albertsons shopping center
The best deal you will find on a huge sub in Gainesville. Go there with a friend and split a foot long and you will spend less than $3. WARNING - A six inch here is equivalent to a foot long at subway! Hogans also features a bar with a wide variety of beers including Guinness on tap.

Pio's Pasta
$10-$20
Two Locations:
20th ave. West of 34st St. & Downtown just south of The Library club
One of my favorite Italian stops with two locations to choose from. Both offering the same quaint and charming atmosphere you would expect to find at a much more expensive restaurant. This one is at the top of my list of great places to take a date. Try the Lobster ravioli or the gnocchi. Both are incredible.

Bonefish Grill
$15-$35
Butler plaza just west of Wal Mart
A newcomer to Gainesville offering the same incredible food I have had at their many other locations around the US. The flounder and grouper are exquisite. The oyster and calamari appetizers were my favorite. In addition to some of the best seafood in Gainesville, Bonefish also sports an extensive wine list, spacious comfortable atmosphere, and exceptional service. All this comes at a price, however, so you may want to save this one for a special occasion.

Physics vs. Chemistry Paintball Fight

by Cathy Yeh

Mission: Defeat Chemistry Club in a game of paintball
Team SPS: Neesha Anderson, Rachel Anderson, Don Burnette, Chris Cook, Lindsey Gray, Patrick Hearin, Tim Jones, Lex Kemper, Simcha Korenblit, Nick Kvaltine, Stacy Wise, Cathy Yeh

Reinforcements to Team SPS: Tim’s two roommates (one of which was a force to be reckoned with)
Location: Rocky Creek Paintball on 10614 Archer Rd

http://www.rockycreekpaintball.com

Physics majors, some decked in camouflage, rendezvoused at the loading dock of the New Physics Building on Saturday, March 19, at 1230 hours.

At around 1250 hours, Tim and his roommates arrived in a customized, tangerine mini-bus (http://www.ufbus.com), used primarily for his tailgating but serving that afternoon as the perfect vehicle of transport for Team SPS between the physics building and Rocky Creek.

Team SPS turned more than a few heads upon its arrival. Swaggering out of the bus, SPS-ers claimed a table to set up their equipment. They spotted the enemy, the Chemistry Club. SPS members gleefully noted that, wearing bright orange, white, and blue t-shirts, the ten Chemistry Club clones were perfect moving targets. The teams loaded their guns with paintballs and donned their masks. At 1400 hours they were ready to battle it out.

SPS-ers obliterated the Chemistry Club in the first paintball course. Many battles followed with no one clearly gaining the upper hand. It didn’t help SPS that midway into the game, one of Tim’s roommates (the really good one) defected to Chem. in order to even out the numbers. At 1400 hours they were ready to battle it out.

During a battle on a field consisting of recycled port-o-potty shields, the number fighting on the side of SPS had been reduced to one. Nick, the lone survivor, scurried backwards in an effort to prolong his feeble existence as long as possible while his comrades looked on helplessly from behind a screen. He met with an ignominious end—surrounded by the enemy and sandwiched between port-o-potties.

Both sides lost count of the wins and losses—it was much more fun comparing paintball welts and tracking down who Shot whom. Shouts of “Who hit me in the trees?” were answered with proud cries of “Hey that was me!” Mingling between battles over cookies and Gatorade, it turned out that, unpardonably nerdy chemistry shirts aside, the Chem. Clones weren’t half bad after all.

At 1700 hours, SPS-ers headed back to the physics building, bruised, sweaty, and happy.
The Physical Basis for Music

by Cathy Yeh

From the beginning of recorded history, people have wondered what would happen if a string were plucked or a reed was blown. Through many centuries of trial and error, sophisticated instruments were developed from these principles. Though the instrument makers never really knew, nor were they very concerned, how and why their instruments worked, they just knew what they found worked and what didn’t. In today’s Information Age, however, we are no longer strictly satisfied with the “what” and often put much time, effort, and money into determining “why.”

Enter PHY 2464, The Physical Basis for Music. This course will give you the basics of how and why everything from a guitar to a pipe organ works. Though the course deals with both physics and music, no prior knowledge of either is necessary. The only prerequisite is an interested mind.

The course is split up into three parts. The first third touches on how sound propagates and how we hear it. The second explains how each family of instruments works. The third touches briefly on room acoustics. Although some calculation is necessary on the tests and quizzes, the course is centered more around concepts than math. The lectures are given with the aid of Powerpoint presentations and various demonstrations, both visual and aural. The presentations are also posted on the course website as .pdf files to assist with studying.

The professor, Dr. Sam Trickey, is a physicist with an interest in music. He brings a certain uniqueness to the course, both in his personal experiences and his connections. For instance, he is the official caretaker of a local pipe organ, creating the opportunity for the class to see how a pipe organ actually works. He also brought in a local violin maker and repairman to talk about violins.

The course has been particularly interesting for me as a musician with an interest in physics. Though there is a need to study for the tests and there are some homework assignments, the class is definitely of the low-stress variety. I would recommend this class to anyone who has ever wondered how and why their instruments work and what they found worked and what didn’t. In today’s Information Age, however, we are no longer strictly satisfied with the “what” and often put much time, effort, and money into determining “why.”

The Physical Basis for Music

Course: PHY2464
The Physical Basis for Music
Instructor: Dr. Sam Trickey
Prerequisites: None
Credits: 3
Gen Ed Credit: Physical Science

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Theodore Roosevelt once said, “The valor of a nation, like the value of an individual, rests on the quality of its will to fight.”

Motion in space: A Study of the Ages

by Amruta Deshpande

At the time of Galileo’s discovery of Jupiter’s satellites, science was strongly influenced by social and religious values. If there were recurring parallels in nature such as the “seven metals,” then these parallels must appear in other branches of science as well, namely in the number of planets in the seven systems. This argument is a strong indicator of how old the study of stars and planets really is. This argument might also dangerously encourage one to take the scientific discoveries during these times lightly.

Orbital dynamics today rests firmly on the shoulders of giants of this time. Calculations performed by NASA or other interested parties are all computerized, but the mathematics is still old. The mathematics is used in today’s computerized calculations. Solutions to differential equations of motion were obtained then analytically, and no more solutions have been found since. If you’re a math hound and attack all mathematical challenges, perhaps you would consider contributing to this field by attempting to solve a 3-Body problem. To this day no complete solution exists for 3 bodies (without restrictions) orbiting around one another.

In the process of learning orbital dynamics, you will encounter the language of the time when it was at a peak. Words like “epoch,” “apogee,” “true anomaly,” and “First Point of Aries” all describe physical angles, directions and quantities used in calculation. They impose a sense of grandeur along with a hint of amusement. I mean, who wouldn’t want to measure the true anomaly of a satellite at epoch (the angle from the semi-major axis at which a satellite first begins its elliptical orbit)?

For those interested in learning about this subject in depth, UF offers a course, “Astrodynamics” (EAS4510). It is a fast-paced course which covers various spatial trajectories. The text is a light and interesting read with musing historical facts and is titled “Fundamentals of Astrodynamics” by Roger R. Bate et. al. Paying attention in Mechanics II of the physics curriculum will also broaden understanding of orbital dynamics, but I recommend reading the text for Astrodynamics as it presents quotes from giants to make for a more interesting read.
On the Creation and Operation of the base known as “Babylon 5”

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(Received 31 March 2005; accepted 31 March 2005)

Babylon 5 is a science fiction television show that takes place in the 23rd century. The name refers to the space station that is the setting of the show. The 5 refers to the fact that it is the fifth one to be built.¹ The first three blew up before they were completed and the fourth one disappeared before it was built.

The idea of the show is that in the 23rd century, humans were contacted by an advanced civilization called the “Centauri”. The Centauri gave humans space ships and hyperspace portals and taught humans how to make their own. In exchange for this, the humans gave the Centauri trinkets that they would sell back where the Centauri came from.² As humans began exploring the galaxy, they also encountered other civilizations. During the first meeting of humans and a civilization called the “Minbari,” a misunderstanding led to the death of the supreme religious and political leader of the Minbari. In addition to being very upset about this unfortunate occurrence, the Minbari were much more technologically advanced than the humans. In response, the Minbari launched a holy war against the human civilization. The Minbari attacked earth and quickly crushed all of its defenses. Upon destroying the human’s defenses the Minbari immediately surrendered.³ The audience is not told why the Minbari did this.

After the Earth-Minbari War, the idea for a neutral meeting place for negotiations became popular. The Babylon base was this negotiation base. How the base would operate was modeled on the United Nations from earthican history.

On the base there are ambassadors for five main powers: the humans, the Minbari, the Centauri, the Narn, and the Vorlorn. The Narn were once under the domination of the Centauri and dislike them greatly. The audience knows very little about the Vorlorn except that space ships that go into Vorlorn territory are never heard from again. The Vorlorn wear special suits that hide their physical form.⁴ Other lesser powers have ambassadors on the base as well. The end.


Summer Plans

Layla Booshehri
3rd Year
Quantum Rice Institute REU.
Search for exciton condensation.

Chris Cook
3rd Year
Research at University of California, San Diego. Playing “Godzilla: Save the Earth” all of summer A.

Ivan Diaz
3rd Year
Research at UF.

Mikolai Fajer
3rd Year
Getting married.

John Harter
3rd Year
Research at UF.

Lindsey Gray
2nd Year
Classes at UF

Tim Jones
5th Year
Graduating, having fun during last summer before graduate school at UF.

Nick Kvaltine
3rd Year
Going to China to research thermal conductivity of porous materials.

C. Daniel Rancken
5th Year
Courses, lab work at UF, dual degree in EE/physics.

Joseph Mates
3rd year
“Making money, laying out, getting my flip-on”

Ben Dixon
Misc.
“I refuse to participate in this strange quiz. Don’t quote me.”

Doug Sparks
3rd Year
Quantum Rice Institute REU. Theory project working w/ wavelets to help solve the Schrodinger eqn.

Allen West
4th year
“Summer school wewt!”

Ryan George
2nd Year
Texas, “Chillin’ with my peeps and homies”

Jim Davis
3rd Year
Recipient of the University Scholars award. Testing effects of high magnetic field on gene expression.

Mandi Hughes
2nd year
UCF REU - Optics

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