

Astrophysics Graduate Program at Johns Hopkins University

Frequently Asked Questions, Feb 2014

This document was compiled by Nadia Zakamska (zakamska@pha.jhu.edu), Assistant Professor of Astrophysics and Recruitment Chair, with the help of graduate students, whose comments are *in italics*.

What is the department like?

The Department of Physics and Astronomy at Johns Hopkins University, together with the Space Telescope Science Institute (STScI) in the building directly across the street from ours, forms one of the largest, most vibrant, most active astrophysics communities anywhere in the world. The two buildings together host nearly 200 professional astrophysicists. Every week there are multiple journal clubs, colloquia, and seminars. Scientists from all over the world regularly come for brief or extended visits to give talks or meet with collaborators. Being a member of this institution means being regularly exposed to ongoing work at the forefront of astrophysics research and being able to meet many members of the world-wide astrophysics community.

What are the research opportunities?

JHU is a key member of several multi-institutional collaborations, including SDSS-III and SDSS-IV, Pan-STARRS, Subaru-PFS, and LSST. It is the home of the WMAP and the HST ACS teams. New CMB instrumentation is being constructed, including CLASS, ACT, and ABS telescopes. Each of these projects represents a cutting-edge development in astronomy you could be a part of! In addition, there are many research opportunities outside of large collaborations -- whether working one-on-one with a faculty advisor or as part of a small team of other students and postdocs.

“The advantage of being in this community is that you can always find someone working on the field that you are interested in.” A few highlights include theoretical studies of the Big Bang; observations of the cosmic microwave background; studies of dark matter, dark energy and galaxy formation; observations of active galaxies; theoretical modeling of black holes; and research in interstellar matter and exoplanets in our own Milky Way. New instruments, telescopes and even rockets are being constructed in our building. Graduate students work with 25 astrophysics faculty members (<http://physics-astronomy.jhu.edu/people/?filter=faculty>; click on Astronomy & Astrophysics), as well as with staff astronomers at STScI (<http://www.stsci.edu/institute/smo/general-information/research-staff-directory>). A description of some of the topics of

ongoing research can be found on the website of the Center for Astrophysical Sciences: <http://sites.krieger.jhu.edu/astronomy/>. Often the best way to find about recent and on-going research by a faculty member you are interested in is to look up his/her publications on http://www.adsabs.harvard.edu/abstract_service.html.

What if I have not yet decided what research I want to do?

In the first two years of the graduate program, students are free to try out several different research projects. *“Since the first and second year research is divided into semesters (Fall, Spring, Summer), it is easy to switch between projects at the end of a semester to get a feel for different types of research. You can work with a professor for just one semester, decide to switch, and there are no hard feelings.”* You might do several projects before starting your thesis, or you might stay with the same group for the entire duration of your Ph.D. Many of the first ‘trial’ projects end up being published in refereed literature.

How can I choose my first project?

Graduate students arrive in the second half of August, and within the first few weeks there are several events designed to introduce faculty and students to each other. We have an annual Fall Research Jamboree, in which faculty describe their research and hold meetings with students to discuss specific projects available in their groups. By the end of September, students choose their first research advisor with whom they work through the Fall semester of their first year. After that, they may stay in the same group or switch to another one. *“It definitely seems like JHU gives you a lot more opportunity to discover what kind of research you want to do and who you want to work with, compared to other places.”*

What is life as a graduate student like?

First- and second-year graduate students conduct research, take graduate classes, and in many cases serve as teaching assistants. *“There is a vibrant graduate student community in the department. We have tea every afternoon, happy hour every Friday, and hold ‘wine and cheese’ events for students to practice research presentations.”* *“Student-run journal clubs allow people to practice presenting and asking questions in fields that are new to them without too much pressure.”* The department offers an extensive selection of graduate classes. Only four classes are required, *“which allows you the freedom to take more courses specific to your field and focus on research.”* *“Some incoming students are surprised there are so few requirements, but by the second year, everyone is really excited by the lower course load.”*

A student further along in the program reports: *"I am finished with classes, so my life as a graduate student is pretty independent - I am able to work hard but on my own schedule. I eat lunch with my research group every day, I travel to meetings, conferences, or telescopes several times a year, I go to JHU and/or STScI colloquia every week, play in the JHU orchestra, and go to graduate student happy hour on Fridays. Other than that and an occasional meeting, I am free to do research."*

What is living in Baltimore like?

"Very nice! The campus is beautiful, the downtown area is nice, there are lots of things to do. Baltimore is a very affordable, vibrant city (even on a student salary!). There is a thriving music and arts scene (<http://www.bsomusic.org/> to <http://baltimore.org/arts-and-culture/baltimore-music/>), innovative film (<http://www.md-filmfest.com/>) and theater performances (<http://singlecarrot.com/>), cheap baseball tickets, several local breweries, farmer's markets, and lots of good food. There are free buses and shuttles that can take you downtown. A lot of people take advantage of the short train ride or drive down to Washington, DC."

"For outdoors-y people like me, there are parks, places to go walking, running and fishing anywhere from within a mile to a 10-20 minute drive. It is a 1.5 hour drive to go camping in the mountains out west, and a 3 hour drive east to see the wild horses on Assateague Island. I go to Shenandoah National Park a couple times a year, which is also a 3 hour drive from Baltimore."

"Our grad student outreach program has really taken off, and our grad students are very involved in the Baltimore community."

Many graduate students live within walking distance of campus, in neighborhoods such as Hampden and Charles Village. *"I was concerned about the safety, but it turns out everything is fine."*

How do I choose the graduate program that is right for me?

"I was looking for a 'triple package': a place where

(1) I had multiple research opportunities that excited me. If one project/advisor did not work out, I had several backups.

(2) I liked the grad student community in the department. These people are going to be your colleagues for five years so it's nice to want to see them outside of work.

(3) The location was somewhere I wanted to live for several years. I spend a lot of time in the department, but I also want to enjoy the things I can do for fun."