

# PHYSICS ANNUAL REPORT

December 2019



## 2019 Illinois Physics Graduate Programs Summary

**Enrollment:** As of Fall 2019, the Illinois Physics graduate student enrollment is 281, placing Illinois Physics among the 4 largest physics PhD programs in the U.S. [1] (see Table 4.1). The Illinois Physics graduate program has had an average enrollment of 286 students over the past 16 years, with minor yearly variations that track fairly closely the number of faculty in physics (see Fig. 4.1). The average number of graduate students per faculty has remained relatively constant at 4.9 students/faculty for the past 16 years. The number of Illinois Physics graduate students per faculty is currently 4.6, which is the 3<sup>rd</sup> highest among the top-20 physics PhD programs in the U.S. (see Table 4.1).

**Retention:** Since 2004, the overall graduation/retention rate for Illinois Physics graduate students has been roughly 85%, which is significantly higher than the national average of 58% for physics PhD programs [2]. Specifically, during the period 2004-2010, the graduation rate for Illinois Physics PhD students was 79%, and 89% of the PhD students who enrolled at Illinois Physics during the period 2011-2018 have either graduated or are still progressing in our program.

**Diversity:** Women currently comprise 27% of our physics PhD student body, which is well above both the average percentage of women in all PhD physics programs, 19% [3], and the average percentage of women in top-12 physics programs, 20% [4]. The percentage of women in our physics PhD program has risen significantly from 13% in Fall 2010 (see Fig. 4.2). In terms of retention, 92% of women who enrolled in our program during the period 2011-2018 have either graduated or are still making progress in our program. The percentage of underrepresented minority (URM) students in our physics graduate program is currently 7.5%, which is significantly higher than the national average of 3% [5]; this URM percentage has remained relatively constant since 2010 (see Fig. 4.3). Retention of URM physics PhD students is a primary emphasis of our program, particularly with the establishment of the Illinois Sloan Center for Exemplary Mentoring in 2015. 87% of URM students who enrolled in our graduate program between 2011-2019 have either graduated or are still making progress in our program.

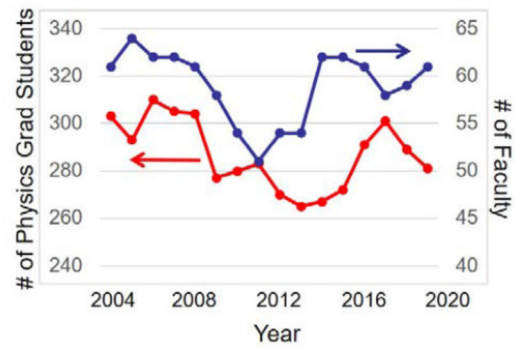
**Engagement and Professional Development:** The department supports several student organizations that foster community and a positive climate for the physics graduate students [6]. The department is also a member of the Illinois Sloan Center for Exemplary Mentoring, which provides mentoring and professional development resources for Illinois Physics URM PhD students. Professional development opportunities for physics graduate students include a scientific writing course (Phys 598 PEN), workshops on proposal writing, a graduate student travel award program, a Physics Careers Seminar series, and an internship program. The Illinois Physics graduate program was also recently selected to be part of the AAU “PhD Education Initiative,” which aims to improve the educational environment for PhD students.

**Grad job placement:** We maintain a job placement database of all Illinois Physics PhD students who graduated since 2005, and Illinois Physics has a 95% job placement rate for PhD students upon graduation, with 54% of PhD students taking postdoctoral positions and 28% of students taking positions in industry (see Fig. 4.4).

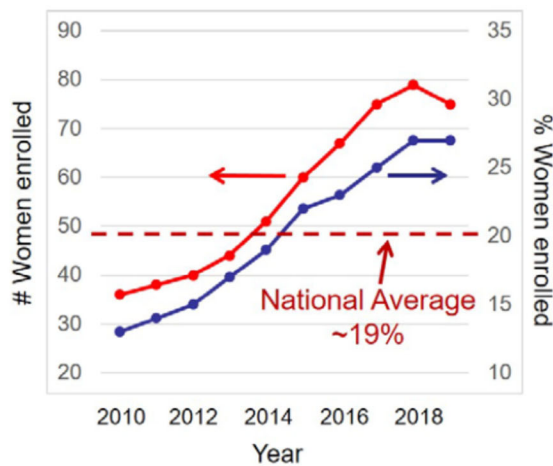
## Figures and Tables:

| Institution      | # Faculty | # Grad Students | # Grad Students/Faculty |
|------------------|-----------|-----------------|-------------------------|
| Columbia         | 29        | 200             | 6.9                     |
| Harvard          | 49        | 244             | 4.98                    |
| UIUC             | 61        | 281             | 4.61                    |
| UC-Berkeley      | 65        | 297             | 4.57                    |
| Colorado         | 73        | 301             | 4.12                    |
| Texas            | 49        | 195             | 3.98                    |
| Stanford         | 50        | 194             | 3.88                    |
| Chicago          | 46        | 166             | 3.61                    |
| Cornell          | 49        | 177             | 3.61                    |
| MIT              | 78        | 274             | 3.51                    |
| Princeton        | 39        | 117             | 3                       |
| UC-Santa Barbara | 55        | 159             | 2.89                    |
| UC-San Diego     | 65        | 169             | 2.6                     |
| U. Pennsylvania  | 40        | 100             | 2.5                     |

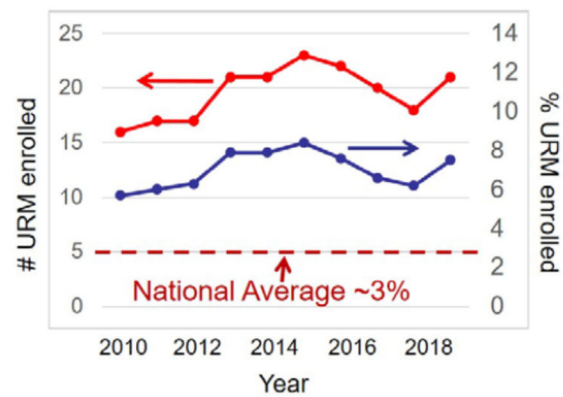
**Table 4.1** Number of physics faculty, number of physics graduate students, and number of grad students/faculty at top-20 Physics PhD programs in the U.S. in 2019. From [1].



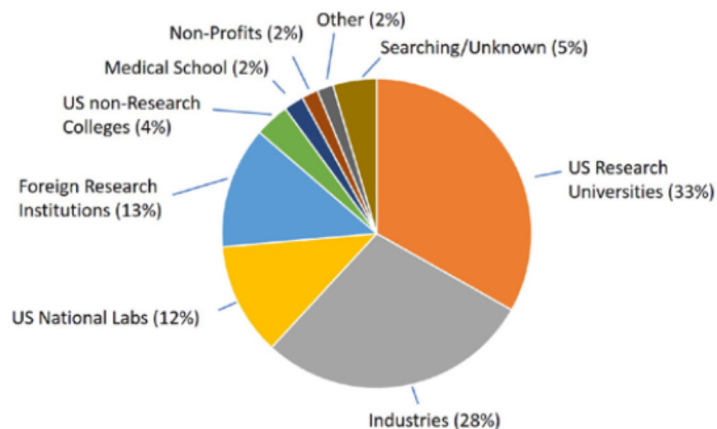
**Figure 4.1** Number of graduate students (red) and faculty (blue) in the Illinois Physics PhD program from 2004-2019.



**Figure 4.2** Number (red) and percentage (blue) of women enrolled in the Illinois Physics PhD program from 2010-2019. National average info from [3].



**Figure 4.3** Number (red) and percentage (blue) of underrepresented minority students enrolled in the Illinois Physics PhD program from 2010-2019. National average info from [4].



**Figure 4.4** Initial job placement distribution of 527 Illinois Physics PhD graduates from 2005-2019.

#### References:

- [1] UC-Berkeley, U. Colorado, and MIT have comparable physics graduate student enrollments to Illinois as of Fall 2019: <https://www.gradschoolshopper.com/gradschool/rankby.jsp?q=1&cid=3>
- [2] <https://www.apsbridgeprogram.org/igen/retention.cfm>
- [3] <https://www.aps.org/programs/education/statistics/womenphysics.cfm>
- [4] 2017 survey of top-12 graduate physics programs by Sean Barrett at Yale University.
- [5] <https://www.aip.org/statistics/data-graphics/race-and-ethnicity-physics-phds-classes-2014-through-2016>
- [6] The Physics Graduate Student Association, which runs social events, a graduate student colloquium series, and the Science at the Market outreach activity; Illinois-GPS, a physics grad student mentoring group for undergrads; Graduate Peer Mentoring, a graduate peer mentoring group for 1<sup>st</sup>-year physics graduate students; Women in Physics and Astronomy, which hosts retreats and social events for female students; and a Graduate Student Diversity Committee.