

Astronomy Enrollments and Degrees

Results from the 2012 Survey of Astronomy Enrollments and Degrees

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REPORTS ON ENROLLMENTS AND DEGREES

Astronomy Enrollments and Degrees (June 2014)

Graduate Physics Degrees:
Largest Departments and
Degree Distribution (April
2014)

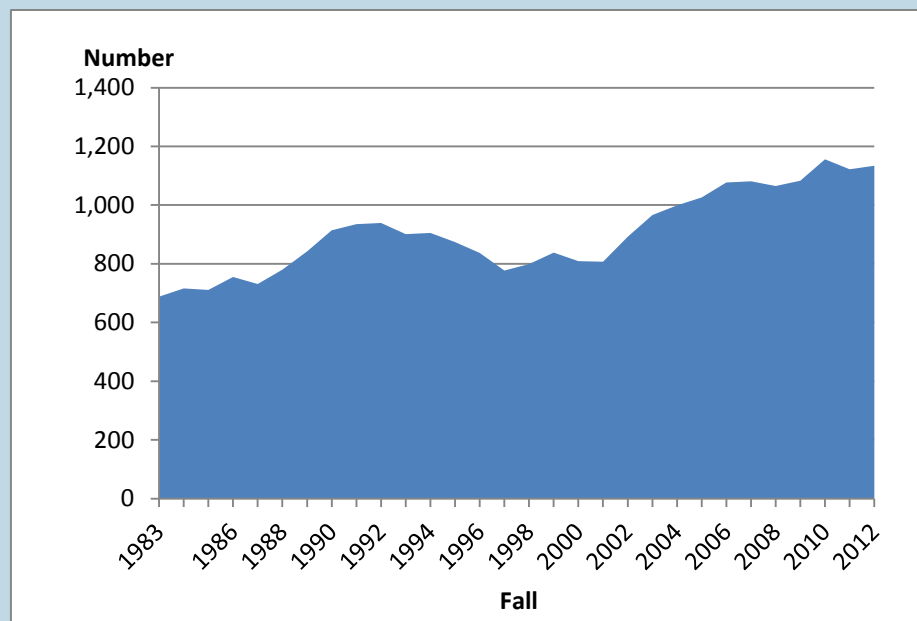
Trends in Physics Master's
(March 2014)

Trends in Physics PhDs
(February 2014)

Interest in astronomy degrees in the U.S. remains strong, with astronomy enrollments at or near all-time highs for the 2012-13 academic year. These increasing enrollments have resulted in record numbers of students receiving doctorates and bachelor's degrees.

Figure 1

Astronomy Graduate Student Enrollments
Fall 1983 through Fall 2012.



<http://www.aip.org/statistics>

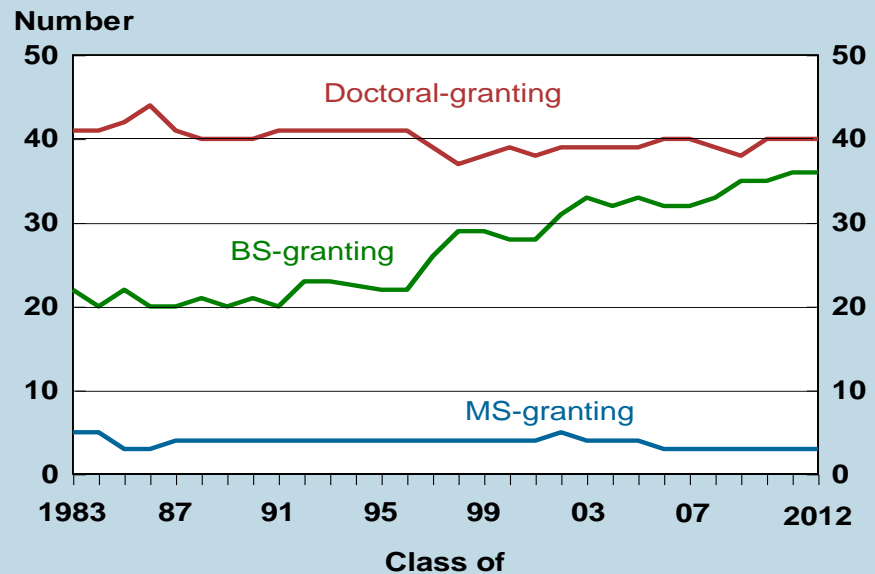
The number of astronomy graduate students enrolled in the fall of 2012 was 1,134, representing almost a 50% increase from a decade and a half ago.

THE 2012 SURVEY OF ENROLLMENTS AND DEGREES

Each year, degree-granting astronomy departments are contacted in the fall and asked to provide their departmental counts of current enrollments and degrees conferred.

Figure 2

Number of Departments Offering an Astronomy Degree by Highest Astronomy Degree Offered, Classes 1983 through 2012.



<http://www.aip.org/statistics>

The increase in the number of astronomy departments offering the bachelor's as their highest astronomy degree is largely attributable to existing physics departments adding an astronomy major.

There were 79 departments in the U.S. awarding astronomy degrees in the 2011-12 academic year. A little more than half (43) of these departments offered master's and doctorates with the remainder offering the bachelor's as their highest degree.

Half of the degree-granting astronomy departments are part of a combined physics and astronomy department. The other half are stand-alone astronomy departments. Three quarters of the doctoral-granting astronomy departments are stand-alone, compared to 20% of the departments that offer a bachelor's as their highest degree.

Detailed department-level astronomy enrollment and degree data for the class of 2012 can be found in the [Astronomy Roster](#).⁽¹⁾

(1) Nicholson, Starr and Mulvey, Patrick. 2013. *focus on Roster of Astronomy Departments with Enrollments and Degree Data, 2012*. AIP, College Park, MD.

The total number of students taking an introductory astronomy course at a degree-granting physics or astronomy department is approaching 200,000. Enrollments in introductory astronomy courses have been steadily increasing over the years and are now about 10% higher than what they were a decade earlier.

Table 1

Introductory Astronomy Course Enrollments by Type of Department, Academic Year 2011-12.

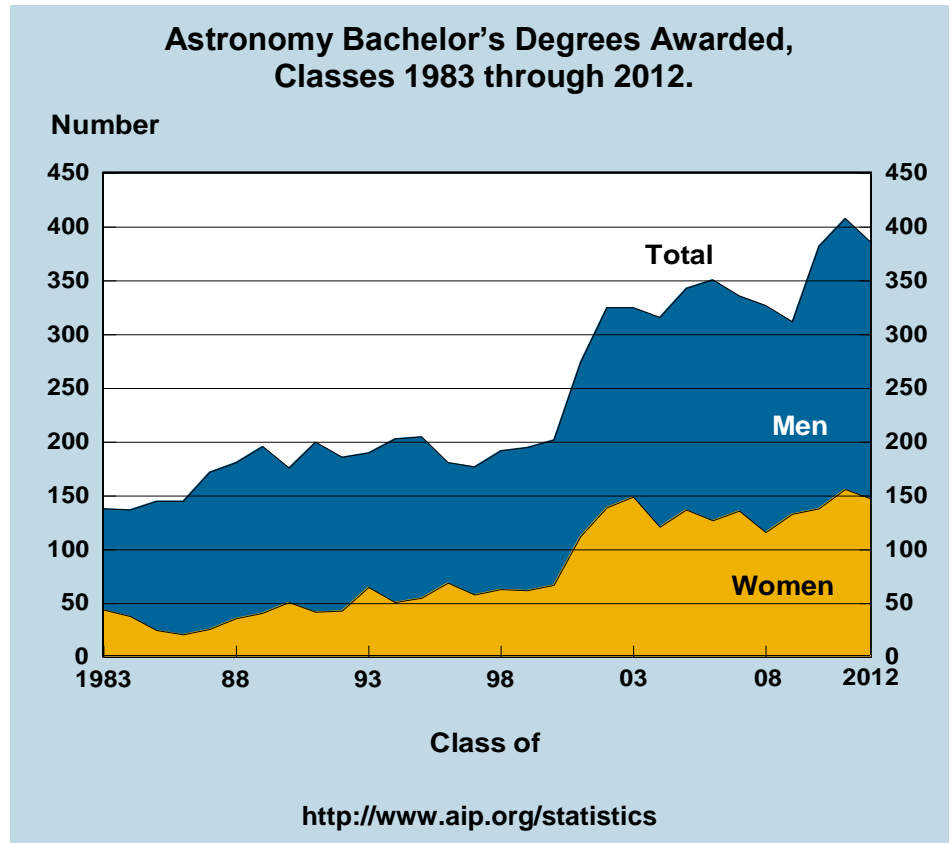
Highest Physics or Astronomy Degree Offered by Department	Depts. Offering Physics Degrees Only	Depts. Offering Astronomy Degrees
Bachelor's	54,000	12,000
Master's	25,000	2,000
PhD	62,000	40,000
Total	141,000	54,000

Note: It's estimated that in 2011 an additional 51,000 students took an introductory astronomy course at a 2-year college. (White, Susan and Chu, Raymond, Physics Enrollments in Two-Year Colleges, April 2013. AIP, College Park, MD)

<http://www.aip.org/statistics>

About three-quarters of introductory astronomy course enrollments were at physics departments that did not offer an astronomy degree.

Figure 3



The number of students earning astronomy bachelor's degrees has more than doubled in the last 15 years.

During the last 15 years astronomy degree production at the undergraduate level has more than doubled. In the 2011-12 academic year, there were 385 astronomy bachelor's degrees awarded at U.S. colleges and universities. This is 23 degrees below the all-time high reached the previous year.

The proportion of women among astronomy bachelor's recipients has not varied much in the last decade. There were 147 (38%) women in the class of 2012. Historically, non-U.S. citizens have represented a small proportion of astronomy bachelor's recipients. Five percent of the astronomy bachelor's class of 2012 were not U.S. citizens.

Table 2

Bachelor's-Only Departments Averaging 5 or More Astronomy Bachelor's Degrees per Year, Classes 2010, 2011, & 2012 Combined.

	Annual Average
Northern Arizona U	15
U of Rochester (NY)	8
Haverford Coll (PA)	5
Mount Holyoke Coll (MA)	5
Williams Coll (MA)	5

Note: List includes only those departments that contributed degree data for all three years.

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Of the 35 departments where the bachelor's was the highest astronomy degree offered, only 5 departments averaged 5 or more bachelor's a year.

Table 3

PhD-Granting Departments Averaging 7 or More Astronomy Bachelor's Degrees per Year, Classes 2010, 2011, & 2012 Combined.

	Annual Average		Annual Average
U of California, Berkeley	25	U of Mass, Amherst	10
U of Colorado, Boulder	22	U of Michigan, Ann Arbor	10
U of Washington	21	Pennsylvania State U	9
Michigan State U	15	Ohio State U	8
Florida Inst. of Technology	14	U of Minnesota, Minneapolis	8
U of Maryland, College Park	13	U of Pittsburgh (PA)	8
U of Texas, Austin	13	Columbia U (NY)	7
U of California, Los Angeles	11	U of Florida	7
U of Wisconsin, Madison	11	U of Illinois, Urbana	7
Boston U (MA)	10	U of Virginia	7
U of Arizona	10		

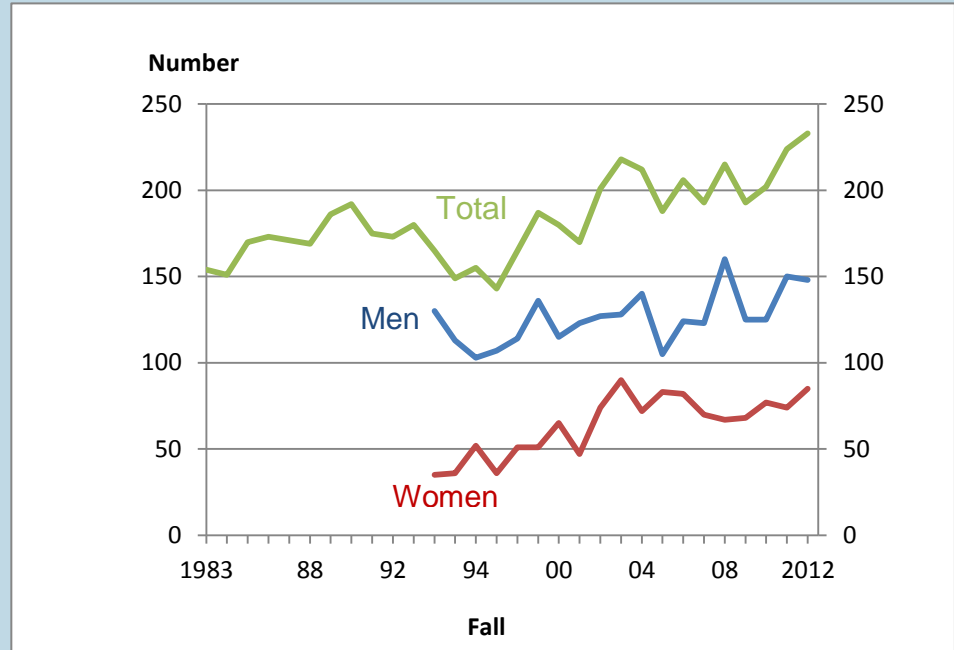
Note: List includes only those departments that contributed degree data for all three years. Nine of the 40 PhD-granting astronomy departments do not offer an astronomy bachelor's degree.

<http://www.aip.org/statistics>

The 21 departments listed in Table 3 were responsible for producing 63% of all the astronomy bachelor's in the combined classes of 2010, 2011 and 2012.

Figure 4

First-Year Graduate Astronomy Student Enrollments by Gender, Fall 1983 through Fall 2012.



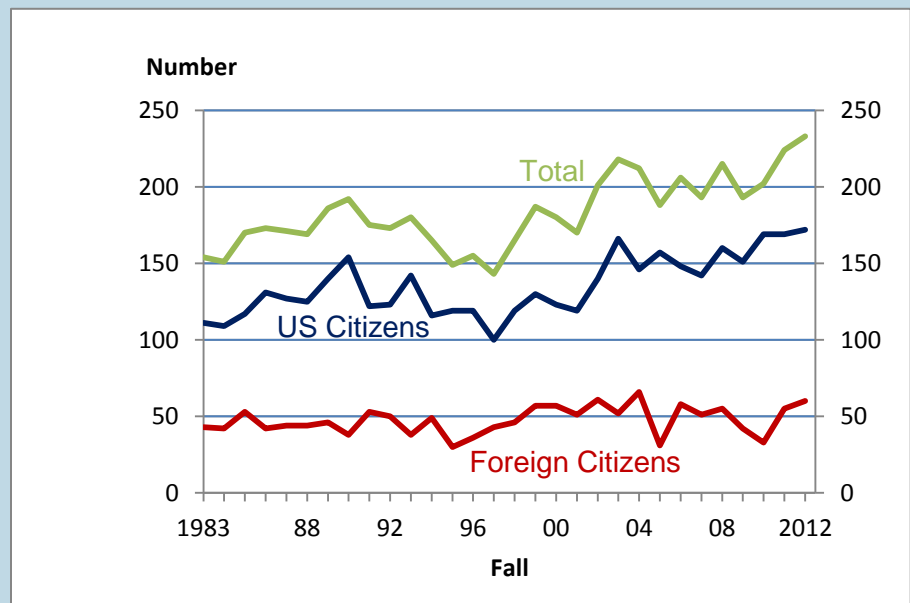
<http://www.aip.org/statistics>

First-year graduate astronomy student enrollments are at an all-time high with 233 students entering graduate programs in the fall of 2012.

The representation of women among first-year astronomy graduate students was 37% in the fall of 2012.

Figure 5

First-Year Graduate Astronomy Student Enrollments by Citizenship, Fall 1983 through Fall 2012.



<http://www.aip.org/statistics>

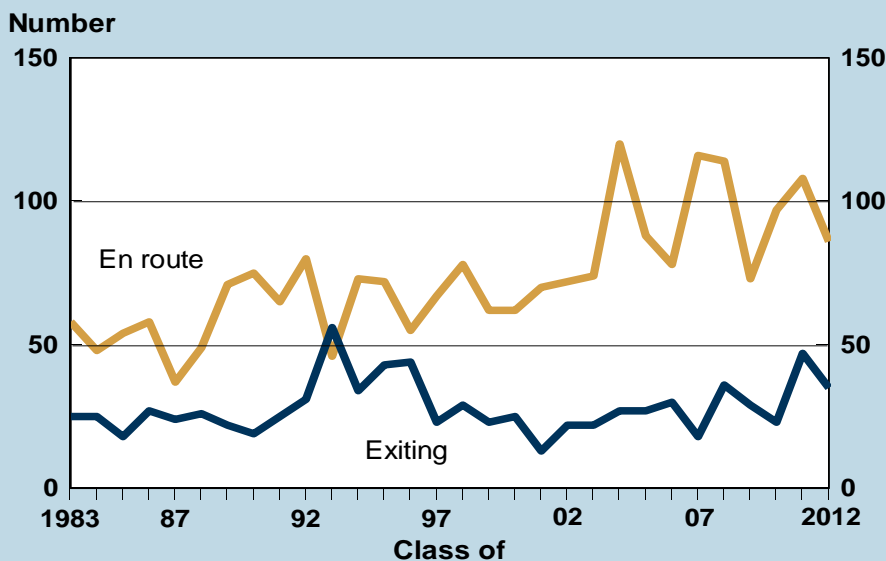
The number of non-U.S. citizens enrolling in graduate astronomy programs has remained fairly consistent for the last 15 years with an average of about 50 non-U.S. students enrolling each year.

Exiting astronomy master's are individuals who upon receiving their degrees leave their current departments. Relatively few students each year receive an exiting astronomy master's degree. The classes of 2010, 2011, and 2012 combined had an average of 35 exiting master's degrees. There were 43 departments that offered graduate degrees in astronomy in the 2011-12 academic year. Three of these departments offered the master's as their highest astronomy degree and were responsible for producing about one-fifth of the exiting astronomy master's degrees in recent years. Forty of these departments also offered a PhD and produced four-fifths of the exiting master's degrees.

Similar to changes in first year-student enrollments, changes in the number of students receiving en route degrees is an indicator of how many students may be receiving doctorates in 3 to 5 years. Not all graduate students pursuing an astronomy doctorate earn a master's en route. We estimate that 75% or fewer astronomy PhDs earn a master's en route.

Figure 6

Astronomy Master's Degrees Awarded, Classes 1983 through 2012.



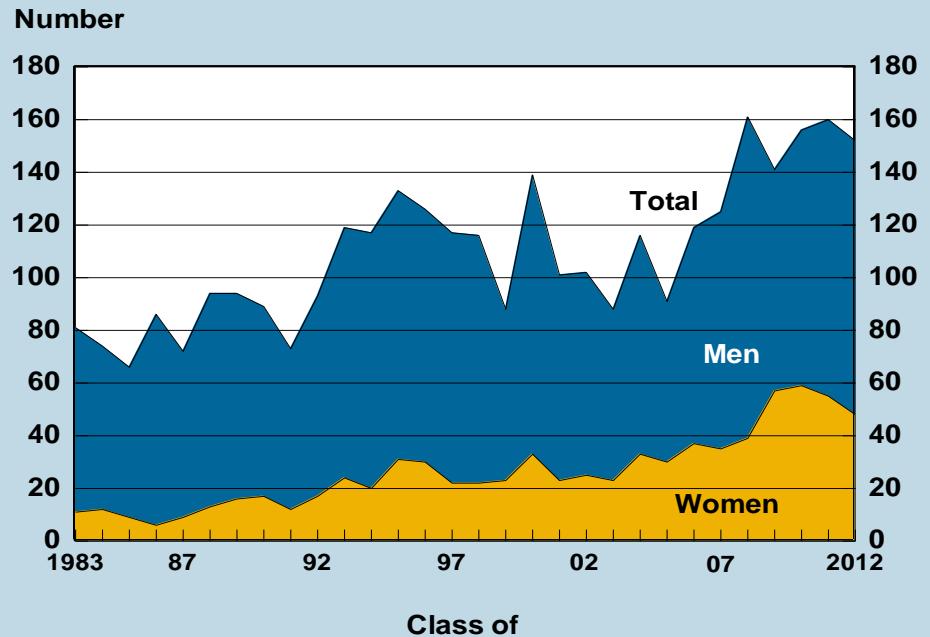
Of the students who earn astronomy doctorates, 75% or fewer have been awarded a master's degree en route.

Note: Exiting astronomy master's are individuals who upon receiving their degrees leave their current departments. They include graduates from departments where the master's is the highest degree offered as well as master's leaving departments that offer a doctorate. Master's en route degrees can only be earned at departments where a doctorate is offered.

<http://www.aip.org/statistics>

Figure 7

Astronomy PhDs Awarded by Gender, Classes 1983 through 2012.



<http://www.aip.org/statistics>

The 40 doctoral-granting astronomy departments averaged 3.8 PhDs in the class of 2012.

The 40 doctoral-granting astronomy departments in the U.S. awarded 152 astronomy PhDs in the class of 2012. After a sharp increase in astronomy doctoral production seen in the classes of 2005 through 2007, recent years have seen the number of doctorates conferred level off at around 155 degrees. Looking back at first-year astronomy student enrolments 2-6 years earlier and at an average of the en route master's recently awarded, it is predicted that astronomy doctorate production will remain near their current levels for the next few years.

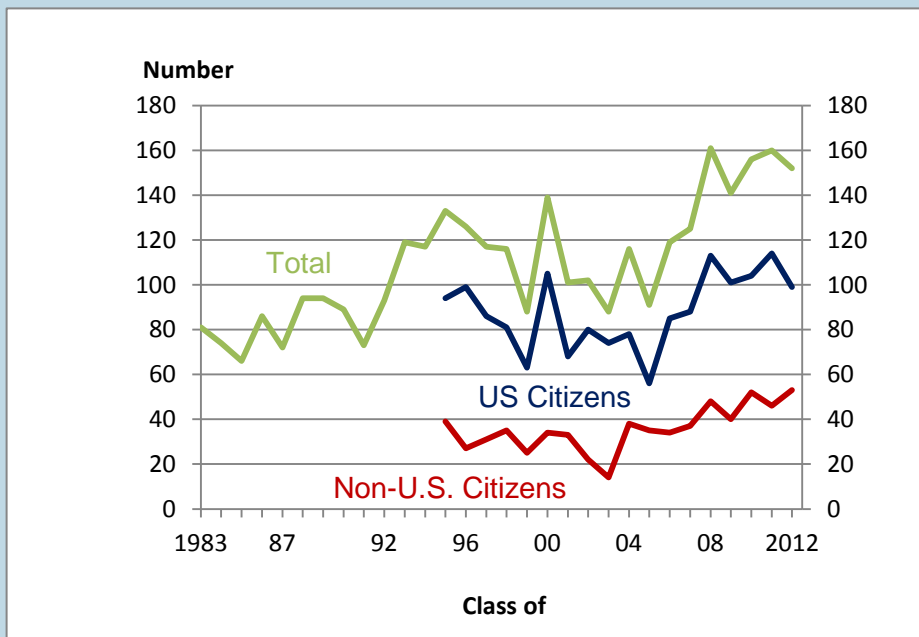
There were 48 women among the astronomy PhDs in the class of 2012, 3 times as many as were conferred 2 decades earlier.

The proportion of U.S. citizens among astronomy doctorates has remained at around 70% in recent years. U.S. citizens represent a greater proportion of astronomy doctorates than they do among physics doctorates recipients, where the U.S. citizens averaged 51% in the classes of 2010, 2011, and 2012.⁽²⁾

The number of astronomy doctorates conferred in Figure 8 includes only departments that expressly offer a doctorate in astronomy. In addition, many of the PhD recipients from the 195 physics departments that award doctorates have subfield specialties of astrophysics. We estimate that these physics departments averaged 166 PhDs a year in astrophysics in the classes of 2010 and 2011⁽²⁾.

Figure 8

Astronomy PhDs Awarded by Citizenship, Classes 1983 through 2012.



<http://www.aip.org/statistics>

U.S. citizens comprised 65% of the 152 astronomy doctorates conferred in the class of 2012.

(2) Mulvey, Patrick and Nicholson, Starr. 2014. *focus on Trends in Physics PhDs*, AIP, College Park, MD.

Table 4

Astronomy Departments Averaging 5 or More Astronomy PhDs per Year, Classes of 2010, 2011, & 2012 Combined.

	Annual Average		Annual Average
Harvard U (MA)	10	U of Texas, Austin	6
Boston U (MA)	7	U of Washington	6
U of Virginia	7	U of California, Berkeley	5
Johns Hopkins U	6	U of Arizona	5
U of Colorado, Boulder	6	U of California, Santa Cruz	5
U of Florida	6	U of Maryland, College Park	5
U of Illinois, Urbana	6	U of Wisconsin, Madison	5

Note: List includes only those departments that contributed degree data for all three years.

<http://www.aip.org/statistics>

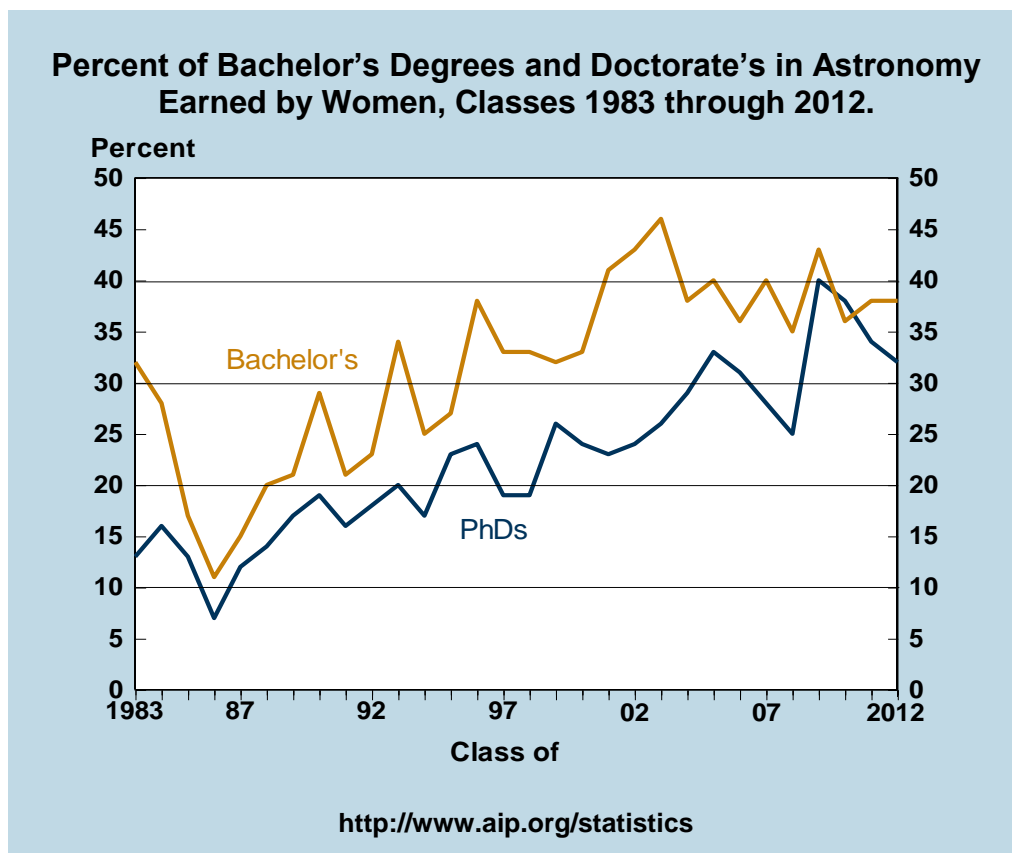
The 14 departments listed in Table 4 were responsible for awarding over half of the astronomy doctorates in the combined classes of 2010, 2011 and 2012.

After steadily rising from the mid-1980's until the early 2000's, the proportion of astronomy bachelor's awarded to women has remained relatively unchanged for almost a decade. The representation of women among astronomy bachelor's is almost twice that of physics bachelor's, where in recent years, women have represented about 20% of the degree recipients.

Women earned 32% of the astronomy doctorates in the class of 2012, a decline from a recent high of 40% two years earlier. Over the longer term, the proportion of astronomy doctorates earned by women has been steadily increasing. The past two and a half decades has seen more than a tripling in the proportion of astronomy doctorates earned by women.

Similar to astronomy undergraduates, women represent a larger proportion of astronomy doctorates than they do among physics doctorates where they comprised 20% of the class of 2012.⁽³⁾

Figure 9



The past 25 years has seen more than a tripling in the proportion of astronomy doctorates earned by women.

(3) Mulvey, Patrick and Nicholson, Starr. 2014. *focus on Trends in Physics PhDs*, AIP, College Park, MD.

Appendix 1. Number of Astronomy Degrees Granted by Highest Astronomy Degree Offered by Department, Academic Year 2011-12.

Highest Astronomy Degree Offered by The Department	Degree Awarded			Number of Departments
	Bachelor's	Exiting* Master's	PhDs	
PhD-granting	278	28	152	40
Master's-granting	19	7		3
Bachelor's-granting	88			36
Total	385	35	152	79

*Exiting master's are students who left their current departments with master's degrees.

Note: Nine of the 40 PhD-granting astronomy departments do not offer a bachelor's degree.

<http://www.aip.org/statistics>

Appendix 2. Trends in Astronomy Enrollments and Degrees, Academic Years 2002-2013.

Academic Year	Number of Astronomy Degrees Granted			Undergraduate Astronomy Major Enrollments		Graduate Astronomy Student Enrollments	
	Bachelor's	Exiting* Master's	PhDs	Juniors	Seniors	1 st Year	Total
2002-2003	325	22	88	385	576	201	892
2003-2004	316	27	116	441	540	218	966
2004-2005	343	27	91	437	584	212	999
2005-2006	351	30	119	511	565	188	1,026
2006-2007	336	18	125	379	569	206	1,077
2007-2008	327	36	161	364	536	193	1,081
2008-2009	322	29	141	388	515	215	1,065
2009-2010	382	23	156	382	605	193	1,083
2010-2011	408	47	160	450	637	202	1,156
2011-2012	385	35	152	487	666	224	1,122
2012-2013				484	694	233	1,134

*Exiting master's are students who left their current departments with master's degrees.

<http://www.aip.org/statistics>

About the Survey

Each fall the Statistical Research Center conducts its Survey of Enrollments and Degrees. The survey is sent to all degree-granting physics and astronomy departments in the U.S. and Puerto Rico to provide information concerning the number of students they currently have enrolled and the number of degrees they conferred in the previous academic year. We define the academic year as being from September to August.

In the 2011-12 academic year 79 departments offered degrees in astronomy. We received responses from all but 7 (89%) of these departments. Estimates were derived and included in the totals for non-responding departments. Astronomy departments consist of stand-alone degree-granting departments (n=39) and departments that are administered along with a physics program (n=40).

Data from this survey are also used to produce the “Roster of Astronomy Departments,” which provides a department-level enrollment and degree snapshot. The Roster covering the astronomy class of 2012 can be found at: <http://www.aip.org/statistics/reports/roster-astronomy-departments-enrollment-and-degree-data-2012>

These reports are possible because of the efforts of department chairs, faculty, and staff in providing their departmental data to the AIP year after year. We thank them for their ongoing support of this survey series.

e-Updates

You can sign up to receive e-mail alerts which notify you when we post a new report. Visit http://www.aip.org/statistics/e_updates.html to sign up. You can indicate your area(s) of interest; we will send you an e-Update only when we post a new report that includes data of interest to you. If you sign up for every possible notification, you should receive no more than 20 messages in a year.

Career Resources

The American Institutes of Physics has a Career Resources page (<http://www.aip.org/career-resources>) that centralizes an array of careers-related information for members of the physical science community. Content includes career advice, the latest science and engineering job opportunities, employment statistics, fellowship information, and science education and career path recommendations. Also featured are links to AIP Member Society Career Resources, which address the needs of specific scientists in greater detail.