

Physics Bachelor's Degrees

Results from the 2010 Survey of Enrollments and Degrees

Patrick J. Mulvey and Starr Nicholson

REPORTS ON ENROLLMENTS AND DEGREES

[Astronomy Enrollments and Degrees \(December 2011\)](#)

Physics Bachelor's Degrees (September 2012)

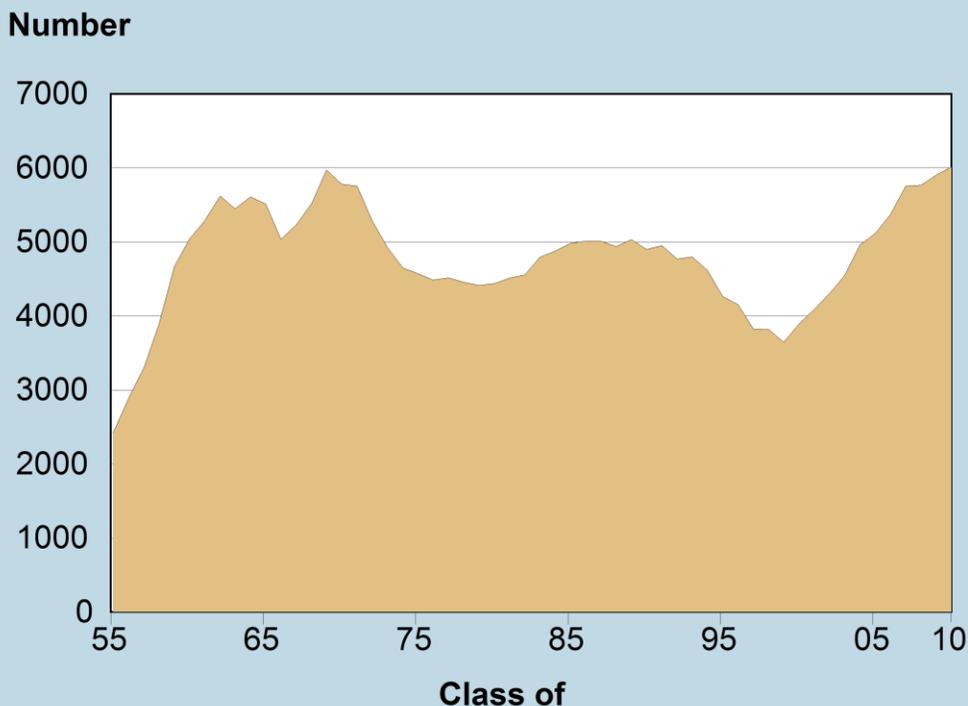
Physics Graduate Degrees (Forthcoming)

Physics Enrollments (Forthcoming)

The number of physics bachelor's degrees awarded in the U.S. has been increasing steadily for 11 years. The 6,017 degrees awarded in the class of 2010 represent a 65% increase since a recent low in 1999. Six percent of these degrees were awarded to non-U.S. citizens. Physics bachelor's made up only a small portion of the 1.65 million bachelor's degrees conferred in the 2009-10 academic year. For every 1,000 bachelor's conferred, only 3.6 were in physics.

Figure 1

**Physics Bachelor's Degrees Awarded in the U.S.,
Classes of 1955 through 2010.**



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

The number of physics bachelor's degrees awarded in the class of 2010 was an all-time high with 6,017 degrees conferred.

THE SURVEY OF ENROLLMENTS AND DEGREES

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

Table 1

**Minority and Ethnic Profile of Physics Bachelor's,
Classes of 2008 through 2010.
(3-Year Average)**

	Number	Percent of all Physics Bachelor's
White	4,808	81
Asian American	310	5
Hispanic American	221	4
African American	157	3
Other US citizens	70	1
Non-US citizens	333	6
Total	5,899	100%

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

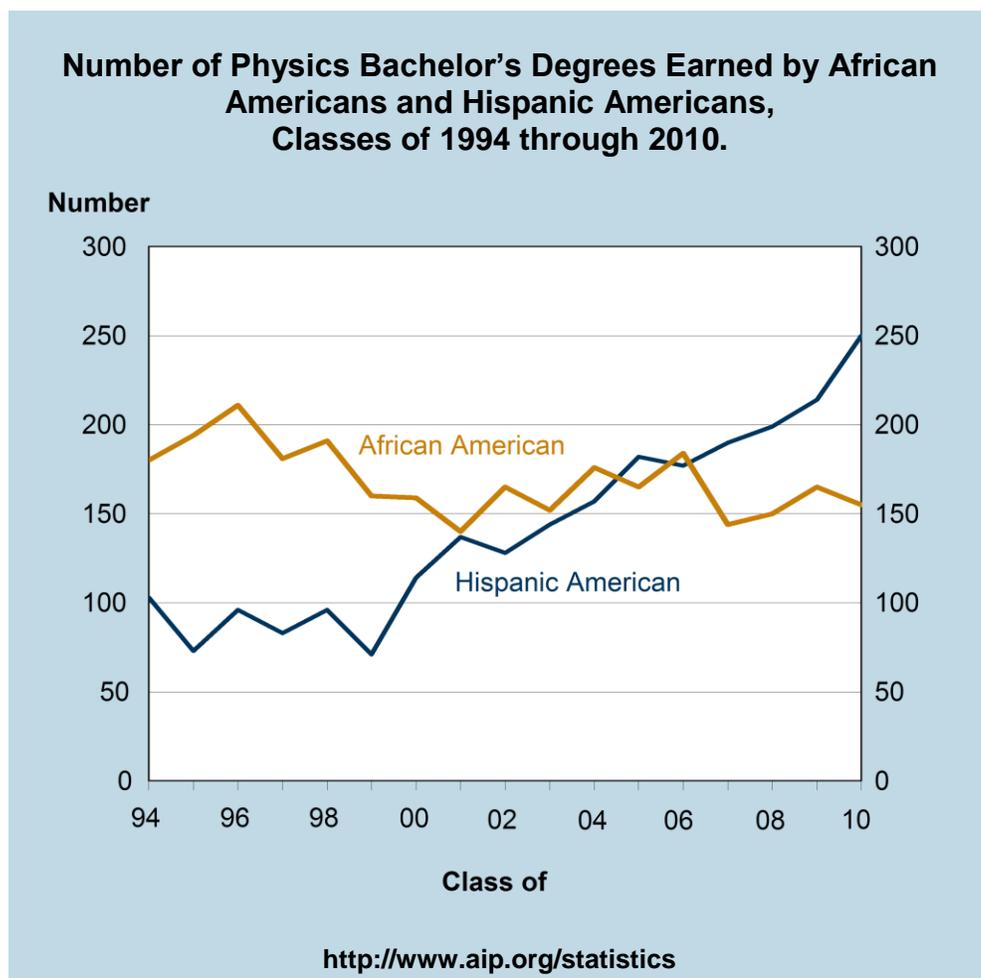
Hispanic Americans and African Americans continue to be under-represented among physics bachelor's recipients.

The representation of African Americans and Hispanic Americans among physics bachelor's remained low. African Americans earned about 157,000 (or 10%) of the bachelor's degrees awarded in all fields during the 2008-09 academic year. Among physics bachelor's, their representation was considerably lower with less than 3% being earned by African Americans. In other words, for every 1,000 African Americans who earned a bachelor's degree only 1 did so in physics.

The picture is similar for Hispanic Americans. About 130,000 (or 8%) of all bachelor's in the class of 2009 were earned by Hispanic Americans, but they represented about 4% of physics bachelor's.

Degree production trends for the number of Hispanic Americans and African Americans receiving physics bachelor's degrees are very different. The number of Hispanic Americans receiving physics bachelor's has tripled since the late 1990's while the number of African Americans receiving physics bachelor's degrees has remained relatively unchanged.

Figure 2

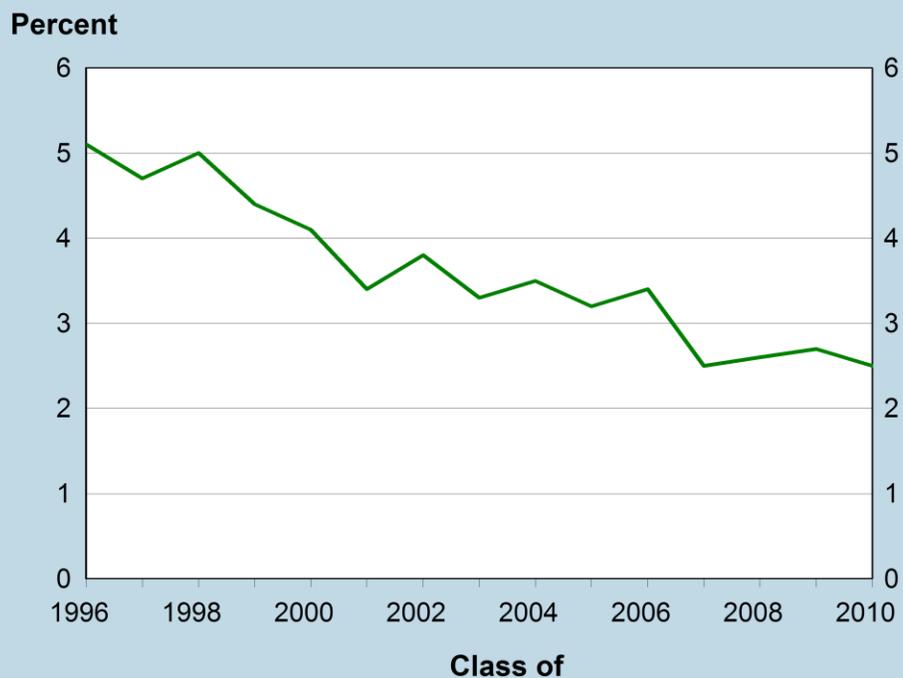


The number of physics bachelor's degrees awarded to African Americans has remained relatively flat for over a decade.

The 250 physics bachelor's degrees earned by Hispanic Americans in 2010 represent an increase of more than 200% from eleven years earlier.

Figure 3

Percent of Physics Bachelor's Degrees Earned by African Americans, Classes of 1996 through 2010.



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

During the last 12 years, the already low representation of African Americans among physics bachelor's degrees has fallen by half.

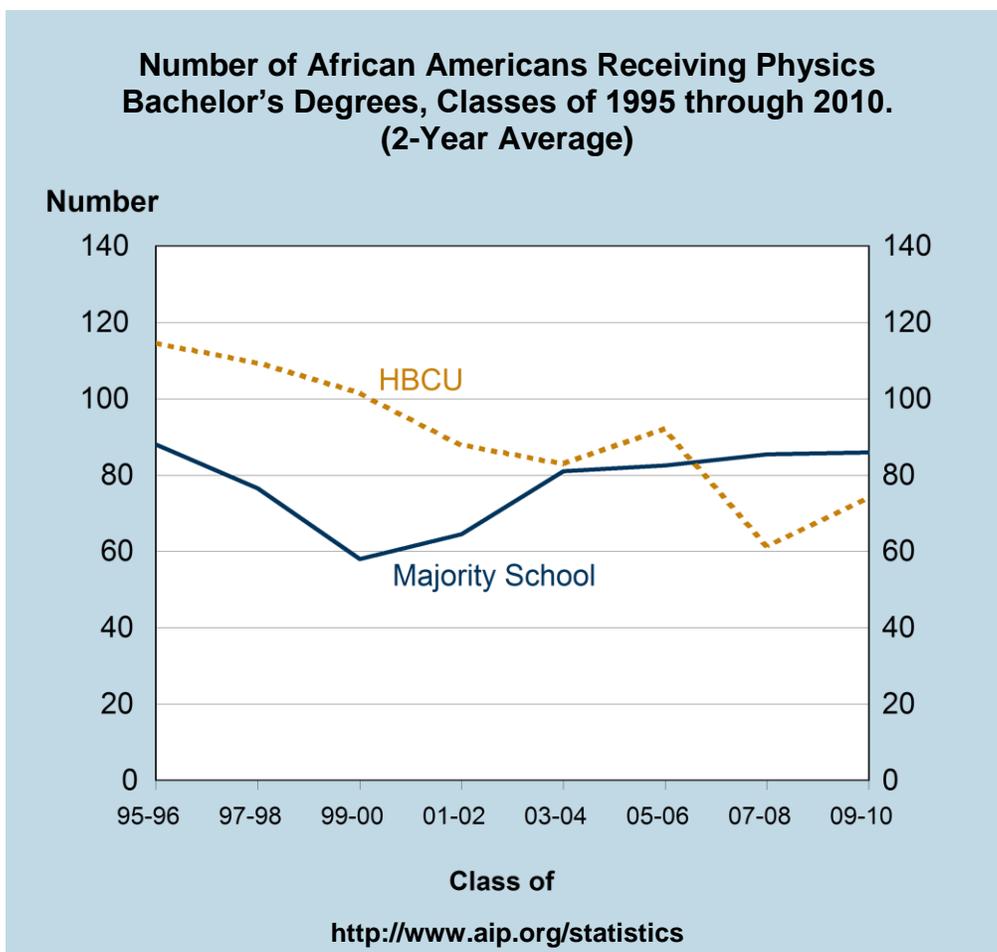
With the number of African Americans receiving physics bachelor's degrees remaining relatively flat in recent years, coupled with an increase in the total number of physics bachelor's being conferred since 1999, the representation of African Americans among physics bachelor's has fallen sharply. African Americans represented 2.5% of the physics bachelor's in the class of 2010. This is about half of the proportion that was conferred to African Americans in the mid-1990's.

The 32 Historically Black Colleges and Universities (HBCUs) that offer an undergraduate physics degree make a significant contribution to the total number of African Americans earning physics bachelor's degrees each year. Enrollments at HBCUs are overwhelmingly comprised of African Americans. For the combined classes of 2008 through 2010, HBCUs awarded 45% of all physics bachelor's earned by African Americans.

Although this is a significant contribution, the proportion and number of African Americans earning a bachelor's degree in physics from an HBCU has been declining. During the 1990's, about 60% of African Americans received their physics bachelor's degrees from an HBCU. Contributing to the decline seen at physics departments at HBCUs is the fact that there are three fewer HBCUs offering physics bachelor's degrees than there were a decade ago.

The approximately 720 majority institutions that award physics bachelor's degrees combined to average about 85 African American bachelor's over the last 7 years.

Figure 4



Both the number and proportion of African Americans receiving physics bachelor's degrees from HBCU's have been declining.

Table 2

Departments Averaging 3 or More African American Physics Bachelor's Per Year, Classes of 2008 through 2010.

	Annual Average
Morehouse College (GA)*	7
Dillard U (LA)*	6
U of Maryland, College Park	5
Hampton U (VA)*	4
North Carolina A&T State U*	4
Tennessee State U*	4
Xavier U (LA)*	4
Jackson State U (MS)*	3

List includes only those departments that contributed degree data for all 3 years.

*Historically Black College and University

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

The University of Maryland was the only majority school to average 3 or more African American physics bachelor's.

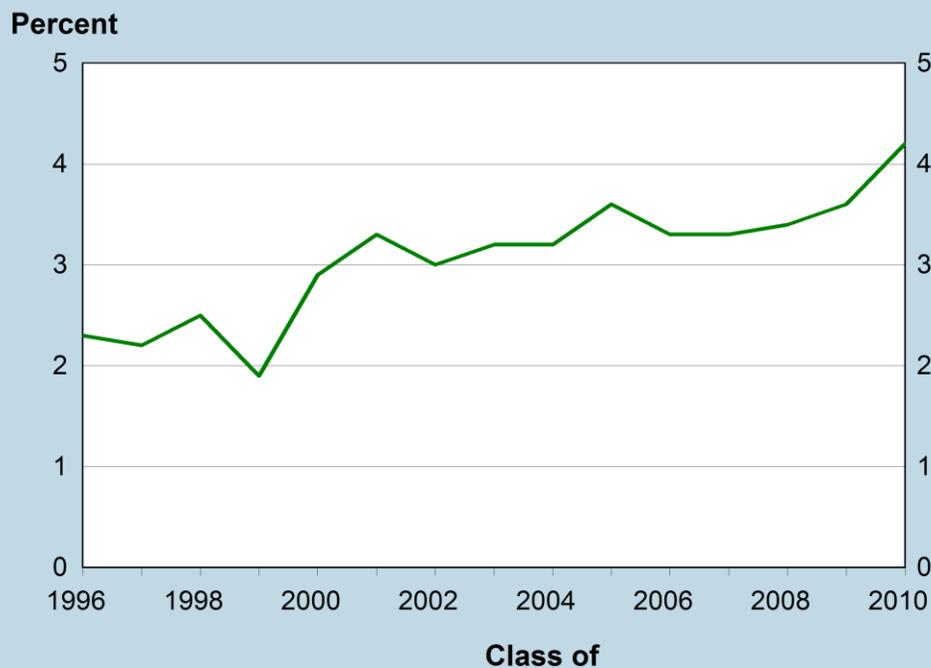
The eight departments listed in Table 2 represent only one percent of all physics bachelor's degree-granting departments in the country. As a group these departments were responsible for awarding almost a quarter of all physics bachelor's degrees earned by African Americans.

Similar to African American physics bachelor's, Hispanic Americans receiving physics bachelor's degrees are not evenly distributed across the country. For the class of 2010, about one-third of Hispanic physics bachelor's earned their degrees from an Hispanic Serving Institution (HSI). An HSI is defined as having 25% or more total undergraduate Hispanic enrollments. There were 35 physics departments located at universities with an HSI designation in the 2009-10 academic year. Not surprisingly, HSI's are largely concentrated in states with large Hispanic populations.

The states with the largest proportions of Hispanic Americans among their physics bachelor's were New Mexico, Texas, Florida, and California, all conferring more than 10% of their physics bachelor's to Hispanic Americans. In the class of 2010, all of the physics bachelor's from the three physics departments in Puerto Rico were Hispanic.

Figure 5

Percent of Physics Bachelor's Degrees Earned by Hispanic Americans, Classes of 1996 through 2010.



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

During the last decade, the proportion of physics bachelor's earned by Hispanic Americans has doubled.

Table 3

Number and Size of Physics Bachelor's Programs by Highest Degree the Department Offered, Class of 2010.

Highest physics degree offered by department	Number of depts.	Percent of depts.	Degrees by type of department		
			Percent of degrees	Average	Median
Bachelor's	503	67	41	4.9	4
Master's	63	8	7	6.3	5
PhD	185	25	52	17.0	13

There are an additional 8 PhD-granting physics departments that do not offer a bachelor's degree.

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The average number of physics bachelor's produced by departments where the bachelor's was the highest physics degree offered was 4.9.

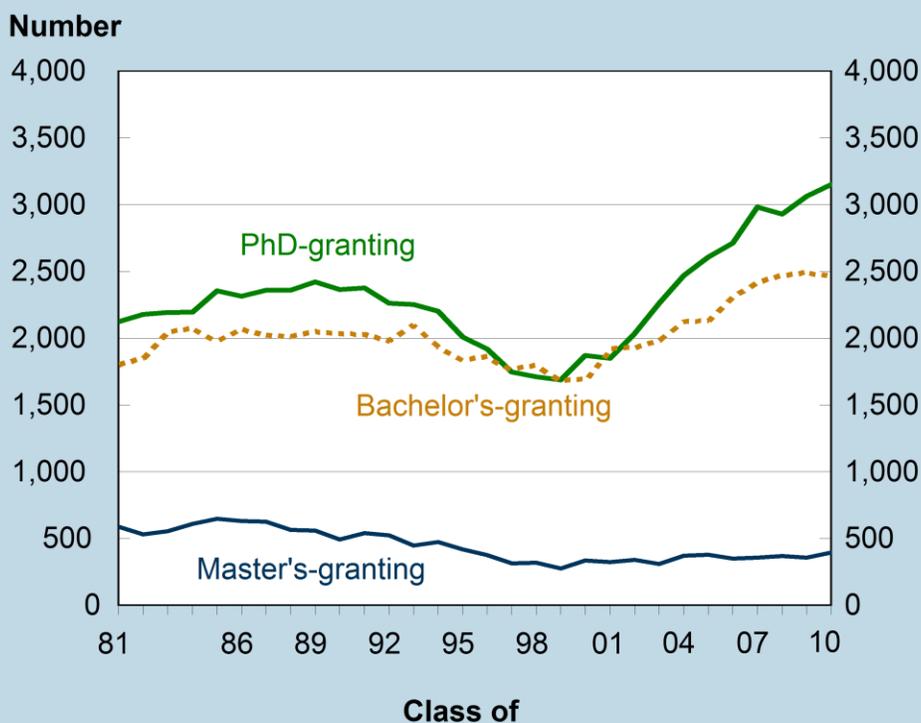
In the academic year 2009-10 there were 759 degree-granting physics departments in the United States. Eight of these departments did not offer an undergraduate degree in physics. Thirty-six of the physics departments also offered an undergraduate degree in astronomy. The data concerning the astronomy students at these departments are reported in a separate [focus on](#) where it is combined with data from all the degree-granting astronomy departments.

The size of a physics department's undergraduate program is greatly affected by the highest physics degree it offers. For the class of 2010, PhD-granting departments averaged 17 physics bachelor's degrees. The average for departments where the master's was the highest degree offered and bachelor's-only departments was 6.3 and 4.9 respectively. Although typically smaller in size, the 503 bachelor's-only departments awarded 41% of all physics bachelor's in the class of 2010.

The number of physics bachelor's degrees conferred has been increasing at all department types since 1999. The largest increase has been at PhD-granting departments, with an increase of 87%. Degree production at physics departments where the bachelor's is the highest degree offered has realized a gain of 47%. Although appearing relatively flat on the scale of this figure, physics bachelor's degree production at departments where the master's is the highest degree offered has risen 44%, from 275 to 395 degrees.

Figure 6

Physics Bachelor's Degrees Awarded by Highest Physics Degree Offered by Department, Classes of 1981 through 2010.



The greatest gains in the number of physics bachelor's awarded have been at the 185 PhD-granting departments, where degree production is up 87% from a low in 1999.

Bachelor's-, master's-, and PhD-granting refers to the highest physics degree offered by the department.

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

Figure 7

Number of Bachelor's-Only Physics Departments by the Average Number of Bachelor's Conferred, Classes of 2008 through 2010.

Number of departments

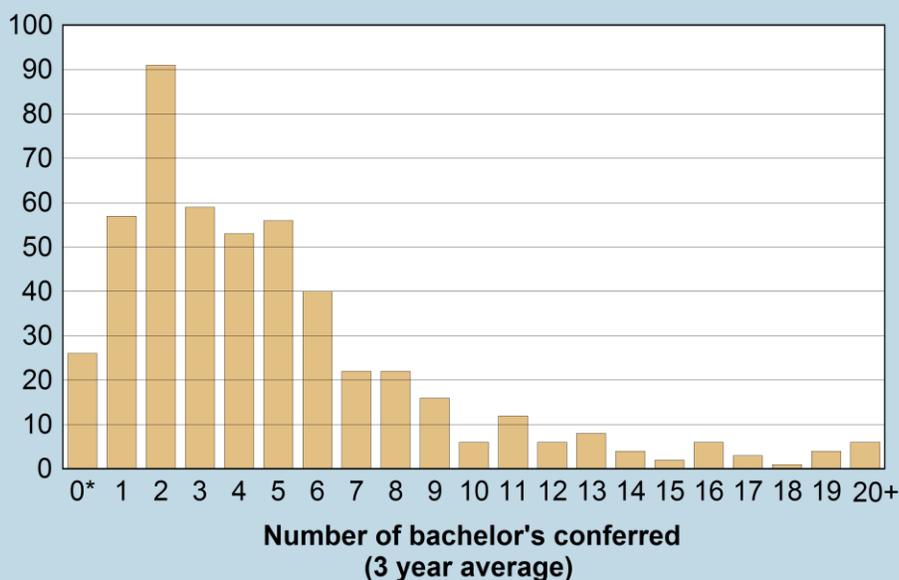


Figure includes 500 departments where the bachelor's was the highest physics degree offered for all 3 years. Data were estimated for non-responding departments.

* Includes 13 departments who conferred one bachelor's degree during the 3 year period.

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Sixty-eight percent of physics departments that offer a bachelor's as their highest physics degree averaged five or fewer degrees a year.

Physics departments that only award a bachelor's degree are generally rather small. Of the 503 U.S. physics departments that offer the bachelor's as their highest degree, over two-thirds averaged 5 or fewer degrees over the last three academic years.

The 56 bachelor's-only physics departments that awarded an average of 10 or more physics degrees in the classes of 2008 through 2010 were a mix of private and public institutions. These departments conferred 32% of the physics bachelor's degrees awarded at the bachelor's-only departments.

The U.S. military uses cutting edge technology which requires appropriately trained personnel to develop and use. As a result, it is not surprising that the three military academies (U.S. Naval Academy, U.S. Air Force Academy and U.S. Military Academy) are among the largest producers of physics bachelor's degrees.

Table 4

Bachelor's-Only Departments Averaging 10 or More Physics Bachelor's Degrees Per Year, Classes of 2008 through 2010.

	Annual Average		Annual Average
US Naval Academy (MD)	31	Gustavus Adolphus Coll (MN)	13
SUNY College, Geneseo (NY)	26	Saint Johns U (MN)	13
U of Wisconsin, La Crosse	23	Saint Olaf College (MN)	13
Western Washington U (WA)	22	The College of New Jersey	13
Harvey Mudd College (CA)	21	U of Wisconsin, Platteville	13
Loyola U, Chicago (IL)	21	Cal State Poly U, Pomona	12
Bethel U (MN)	19	Illinois Wesleyan U	12
Carleton College (MN)	19	Lawrence U (WI)	12
Reed College (OR)	19	Taylor U (IN)	12
US Air Force Academy (CO)	19	Weber State U (UT)	12
Murray State U (KY)	18	Whitworth College (WA)	12
Grinnell College (IA)	17	Amherst College (MA)	11
Illinois State U	17	Beloit College (WI)	11
James Madison U (VA)	17	Brigham Young U, Idaho	11
Cal Poly St U, San Luis Obispo	16	Colgate U (NY)	11
Colby College (ME)	16	College of Charleston (SC)	11
Middlebury College (VT)	16	Gettysburg College (PA)	11
US Military Academy (NY)	16	Ithaca College (NY)	11
U of Wisconsin, Eau Claire	16	Kalamazoo College (MI)	11
Williams College (MA)	15	Kutztown U (PA)	11
U of Wisconsin, River Falls	15	Oberlin College (OH)	11
Allegheny College (PA)	14	Truman State U (MO)	11
Bowdoin College (ME)	14	U of Saint Thomas (MN)	11
Rochester Inst of Tech (NY)	14	Bucknell U (PA)	10
Rowan U (NJ)	14	Colorado College (CO)	10
Angelo State U (TX)	13	Dickinson College (PA)	10
Fordham U (NY)	13	Lewis & Clark College (OR)	10
Furman U (SC)	13	SUNY College, Oneonta (NY)	10

List includes only those departments that offered a bachelor's as their highest physics degree in 2010 and contributed degree data for all 3 years.

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

Figure 8

Number of Master's-Granting Departments by the Average Number of Bachelor's Conferred, Classes of 2008 through 2010.

Number of departments

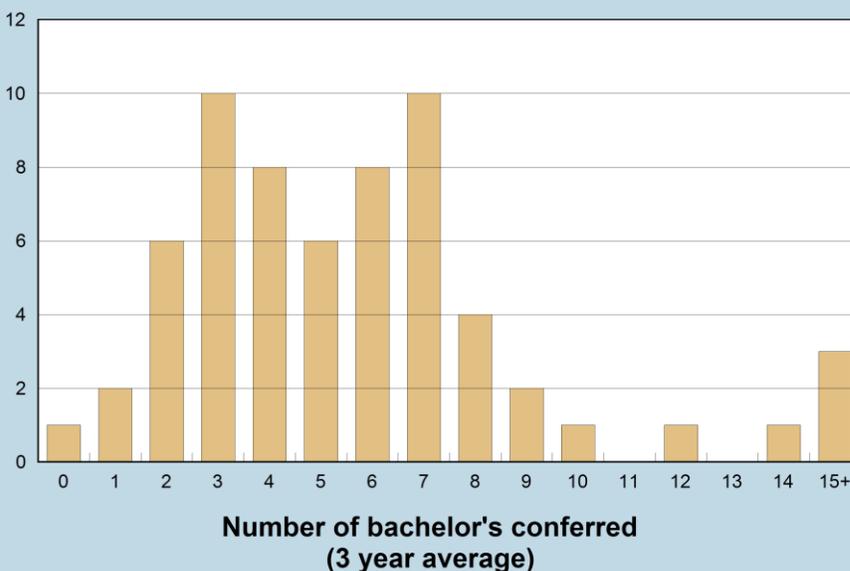


Figure includes 63 departments where the master's was the highest physics degree offered in 2010. Data were estimated for non-responding departments.

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

About half of the departments where the master's is the highest physics degree offered awarded 5 or fewer physics bachelor's degrees.

The 63 departments that offered a master's as their highest physics degree have undergraduate programs that awarded an average of 6.3 physics bachelor's degrees in 2010. This is greater than the bachelor's-only departments but considerably smaller than the undergraduate degree production at doctoral-granting departments. Nine master's-granting physics departments awarded two or fewer bachelor's degrees. Only six master's-granting physics departments averaged 10 or more bachelor's in the last 3 years.

Table 5**Master's-Granting Departments Averaging 7 or More Physics Bachelor's Degrees Per Year, Classes of 2008 through 2010.**

	Annual Average
Appalachian State U (NC)	20
Virginia Commonwealth U	18
Northern Arizona U	16
Miami U (OH)	14
Texas State U, San Marcos	12
Cal State U, Fullerton	9
San Francisco State U (CA)	9
Cal State U, Fresno	8
Cal State U, Long Beach	8
U of Northern Iowa	8
U of Tulsa (OK)	8
DePaul U (IL)	7
Missouri State U	7
North Carolina A&T State U	7
San Jose State U (CA)	7
U of Louisville (KY)	7
U of Puerto Rico, Mayaguez	7
U of Vermont	7

List includes only departments that offered a master's as their highest physics degree in 2010 and contributed degree data for all 3 years.

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

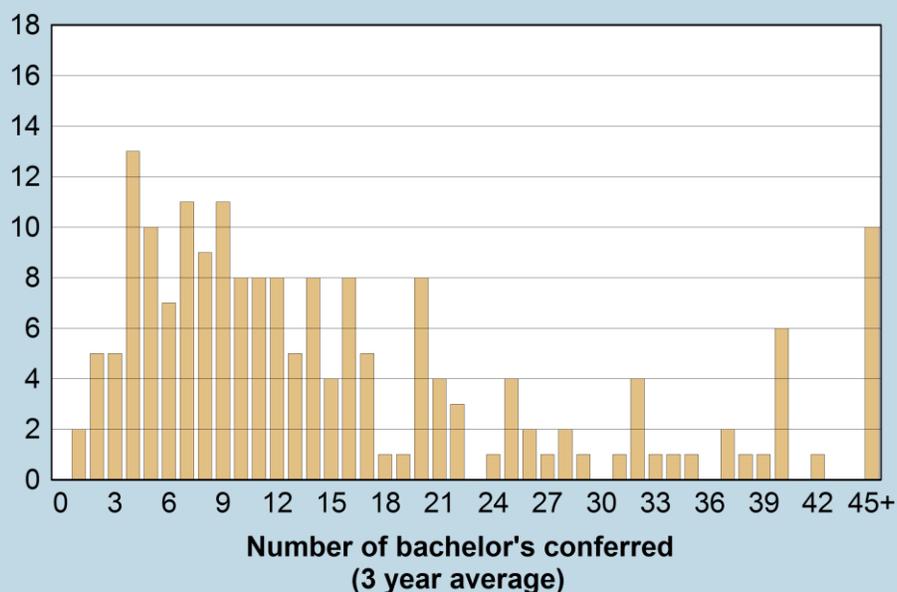
These 18 physics departments accounted for almost half of all bachelor's degrees awarded by the 63 departments where the master's is the highest degree offered.

Compared to bachelor's and master's-granting physics departments, the departments which also have a doctoral program have a considerably wider range in the size of their undergraduate program. These departments averaged 17 bachelor's degrees in the classes of 2008, 2009, and 2010. Thirty-five PhD-granting physics departments averaged 5 or fewer bachelor's degrees. By comparison 55 departments awarded 20 or more bachelor's degrees.

Figure 9

Number of Doctoral-Granting Departments by the Average Number of Bachelor's Conferred, Classes of 2008 through 2010.

Number of departments



There were 17 doctoral-granting departments that averaged 40 or more bachelor's in physics. These few departments were responsible for 15% of all the physics bachelor's conferred in the U.S.

Figure includes 184 departments where the PhD was the highest physics degree offered in 2010. Data were estimated for non-responding departments.

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

Table 6

PhD-Granting Departments Averaging 20 or More Physics Bachelor's Degrees Per Year, Classes of 2008 through 2010.

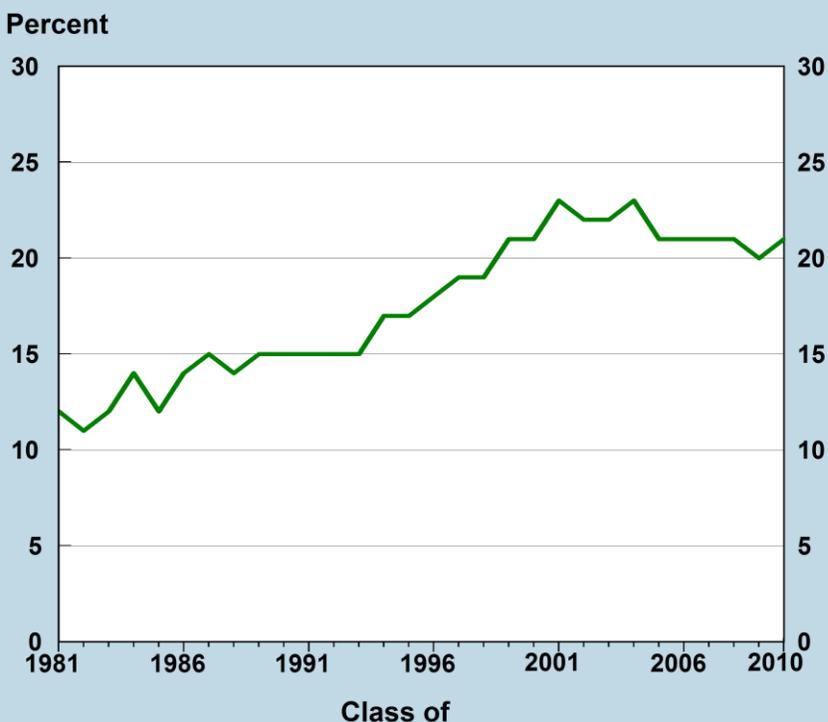
	Annual Average		Annual Average
Mass. Inst. of Technology	83	Carnegie Mellon U (PA)	31
U of California, Berkeley	74	Stanford U (CA)	29
U of Maryland, College Park	70	California Inst of Technology	28
Colorado School of Mines	59	North Carolina State U	28
U of Washington	57	Yale U (CT)	27
U of California, Los Angeles	55	U of Arizona	26
Brigham Young U (UT)	52	U of California, Irvine	26
U of California, Santa Barbara	46	Brown U (RI)	25
U of California, San Diego	42	Princeton U (NJ)	25
Cornell U-Applied (NY)	40	Purdue U, West Lafayette (IN)	25
Ohio State U	40	U of California, Davis	25
U of Colorado, Boulder	40	U of Notre Dame (IN)	24
U of Michigan, Ann Arbor	40	Cornell U (NY)	22
U of Rutgers, New Brunswick (NJ)	40	U of Rochester (NY)	22
U of Texas, Austin	40	Case Western Reserve U (OH)	21
U of Virginia	39	SUNY, Stony Brook (NY)	21
U of Chicago (IL)	38	SUNY, U at Albany (NY)	21
Michigan State U	37	Washington U (MO)	21
Pennsylvania State U	37	Arizona State U	20
Georgia Inst of Technology	35	Florida Institute of Technology	20
U of Minnesota, Minneapolis	34	Portland State U (OR)	20
U of Wisconsin, Madison	33	Rice U (TX)	20
Rensselaer Polytech Institute (NY)	32	Texas A&M U, College Station	20
U of California, Santa Cruz	32	U of Arkansas, Fayetteville	20
U of Florida	32	U of Oregon	20
U of Utah	32	Virginia Polytech Inst & State U	20

List includes only departments that offered a PhD as the highest physics degree in 2010 and contributed degree data for all 3 years.

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

Figure 10

**Percent of Physics Bachelor's Degrees Earned by Women,
Classes of 1981 through 2010.**



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

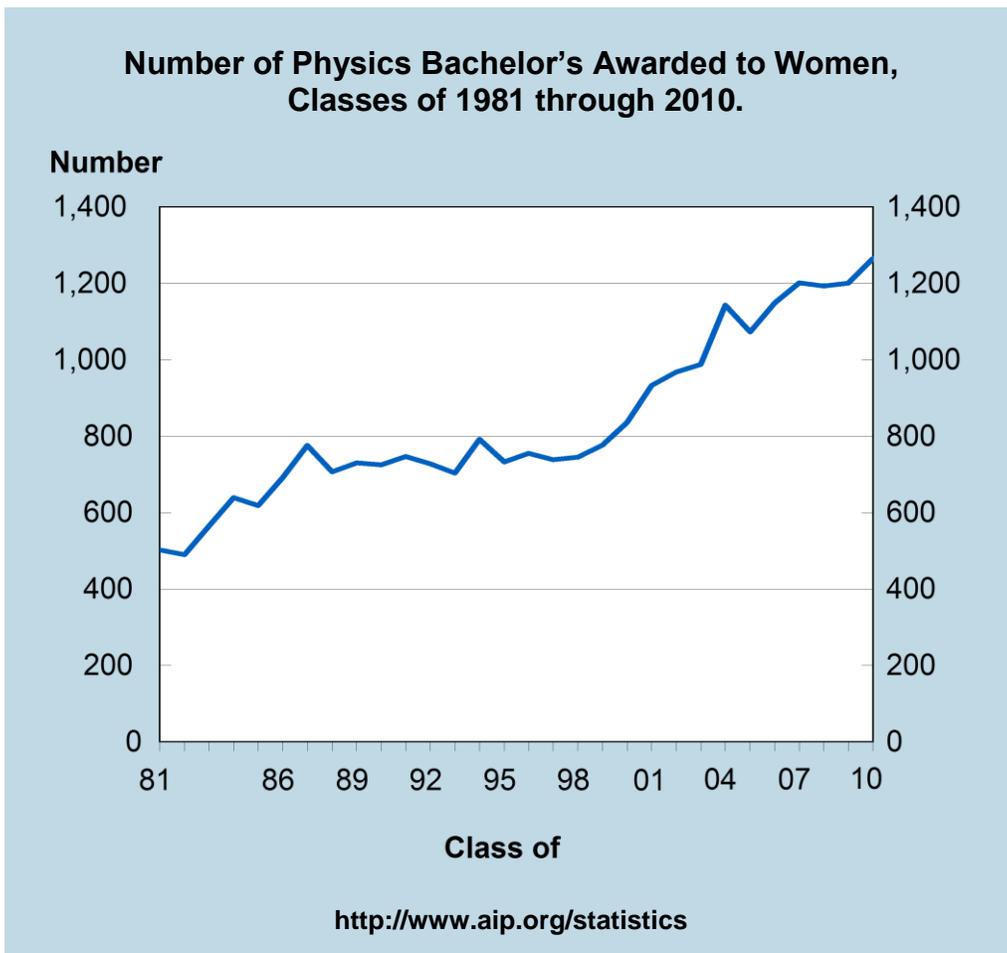
There have been no gains in the percent of physics bachelor's degrees earned by women in more than a decade.

The representation of women among new physics bachelor's degrees has remained relatively unchanged in recent years at around 21%. This is slightly below a high seen in the early 2000's where the representation of women reached 23%.

There were 18 women's colleges in the U.S. with undergraduate physics programs in 2010. These departments contributed 3% of all the women earning physics bachelor's in the class of 2010.

Even though the proportion of women among physics bachelor's conferred in recent years has remained relatively flat, the number of women receiving degrees has increased sharply. In the last dozen years the number of women receiving physics bachelor's has increased 70%.

Figure 11



The number of women receiving physics bachelor's has increased 70% in the last 12 years.

Appendix 1. Physics Bachelor's Degrees Conferred, Classes of 2001 through 2010.

Academic year	Total	Highest physics degree offered by department		
		Bachelor's	Master's	PhD
2000-2001	4,091	1,919	323	1,849
2001-2002	4,305	1,929	340	2,036
2002-2003	4,553	1,981	310	2,262
2003-2004	4,965	2,123	372	2,470
2004-2005	5,113	2,126	379	2,608
2005-2006	5,373	2,311	350	2,712
2006-2007	5,755	2,416	358	2,981
2007-2008	5,769	2,470	370	2,929
2008-2009	5,908	2,488	358	3,062
2009-2010	6,017	2,472	395	3,150

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

About the Survey

The Statistical Research Center of the American Institute of Physics conducts an annual census of all degree-granting physics departments in the United States and Puerto Rico. The survey had a 95% response rate from the 751 departments that granted physics bachelor's degrees in the class of 2010. Estimates were derived for non-responding departments and included in the totals.

In addition to this *focus on* series there is a companion report, "Roster of Physics Departments", which provides a departmental-level enrollment and degree snapshot of the class of 2010. This publication can be found on our web site:

<http://www.aip.org/statistics/trends/archives/physrost10.pdf>

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.