

Physics Undergraduate Degrees

Results from the 2008 Survey of Enrollments and Degrees

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REPORTS ON ENROLLMENTS AND DEGREES

R-151.45

[Astronomy Enrollments and
Degrees \(July 2010\)](#)

[Physics Enrollments
\(February 2011\)](#)

**Physics Undergraduate
Degrees (May 2011)**

Physics Graduate Degrees
(Forthcoming)

*About 70% of the
physics departments
that offer the
bachelor's as their
highest physics degree
average 5 or fewer
degrees a year.*

THE 2008 SURVEY OF ENROLLMENTS AND DEGREES

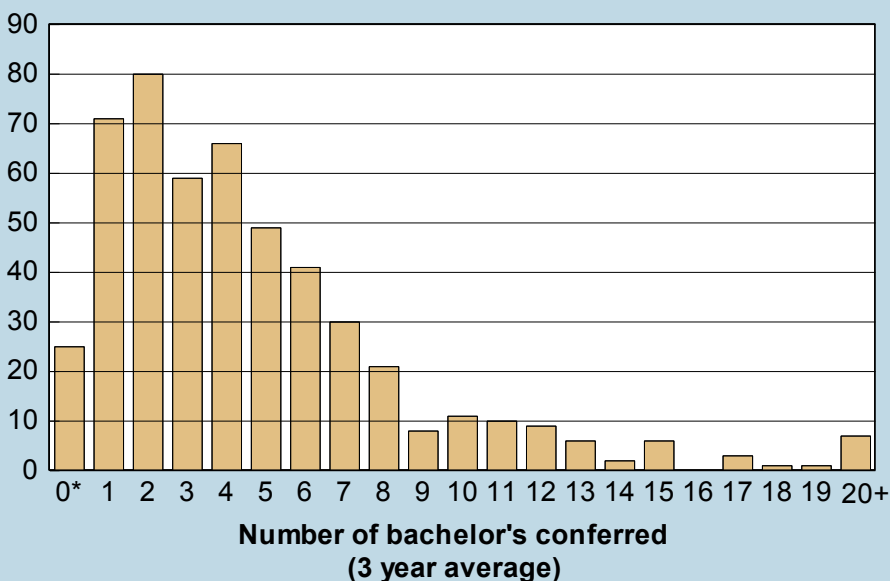
Each year, degree-granting physics departments are contacted in the fall and asked to provide their departmental counts of degrees conferred.

Physics departments that offer the bachelor's as their highest degree tend to be small with only 17% averaging graduating classes of 8 or more. These undergraduate-only departments were responsible for producing 43% of all the physics bachelor's in the class of 2008.

Figure 1

Number of Bachelor's-Only Physics Departments by the Number of Bachelor's Conferred, Classes of 2006 Through 2008.

**Number of
departments**

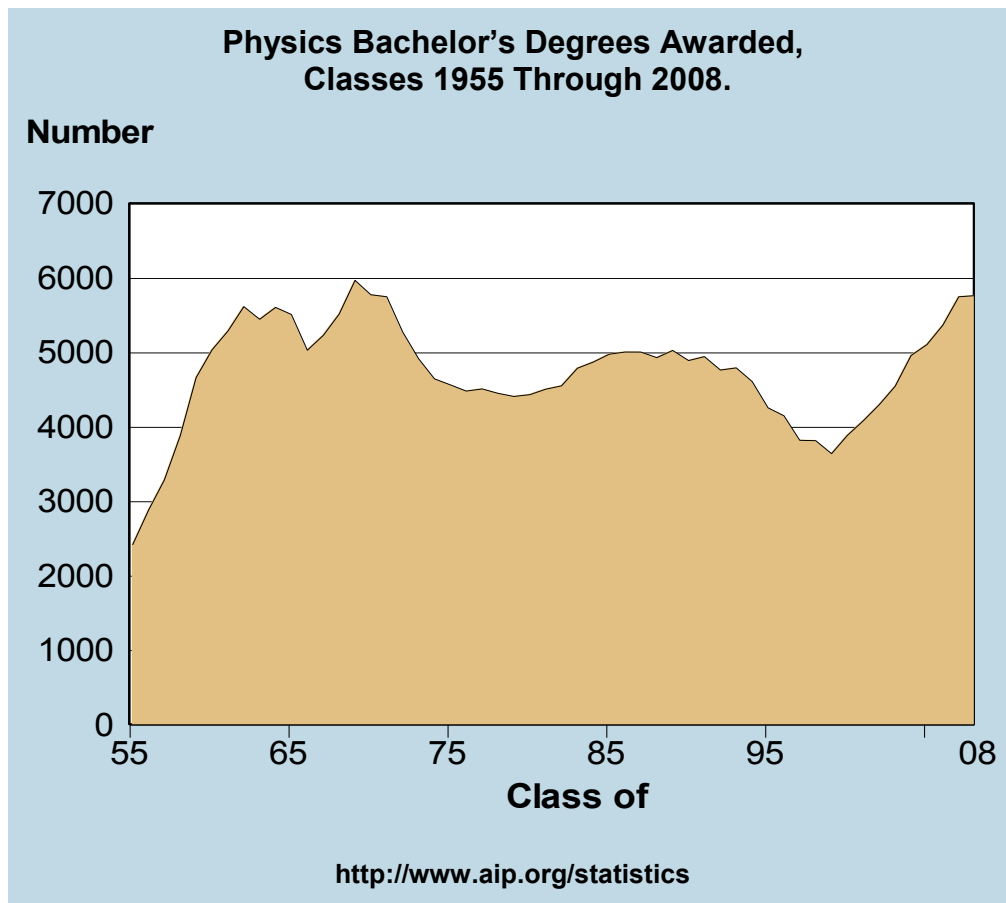


Note: Figure includes 506 departments where the bachelor's was the highest physics degree offered for all 3 years.

* Includes 16 departments who conferred one bachelor's degree during the 3 year period.

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

Figure 2



The number of physics bachelor's conferred has increased 58% since a low in 1999.

The number of physics bachelor's awarded in the US has risen for 9 consecutive years, reflecting an increase of 58% since a recent low in 1999. As a result of continued growth in the number of students enrolled at the junior and senior levels, we anticipate that physics bachelor's degree production will soon reach an all-time high.

There were 5,769 physics bachelor's conferred at US institutions in the class of 2008. Six percent of these degrees were awarded to non-US citizens. This differs greatly from the proportions of non-US citizens receiving physics master's (35%) and PhDs (53%) in the class of 2008.

There were 755 physics departments in the 2007-08 academic year that offered a physics bachelor's degree. The total number of departments offering physics degrees has remained fairly stable in recent years with a few institutions adding or dropping an undergraduate physics degree program each year.

The number of physics bachelor's a department conferred varied greatly by the highest physics degree the department offered. PhD-granting departments comprised just 25% of all degree-granting physics departments, but were responsible for producing over half of the physics bachelor's in the class of 2008.

Table 1

Number of Physics Bachelor's Produced by Highest Degree Offered, Class of 2008.

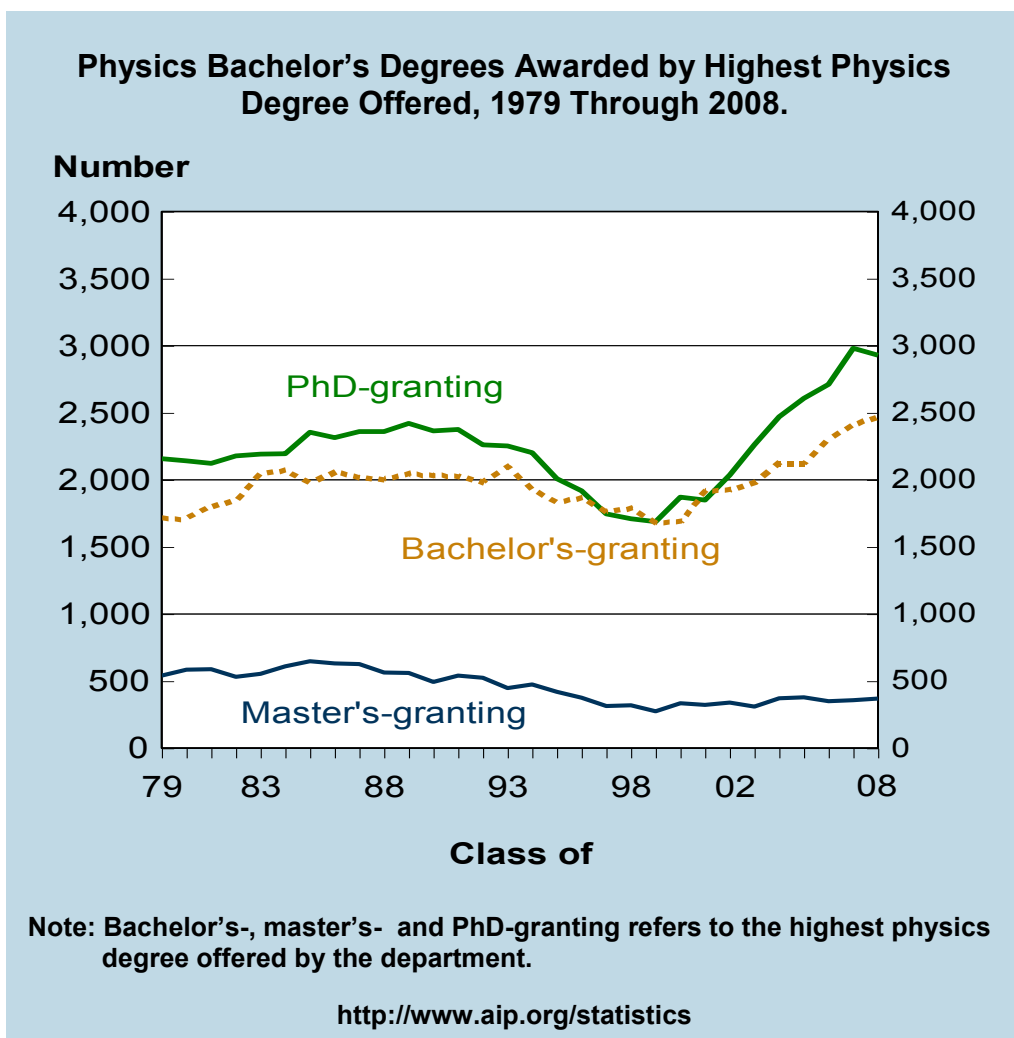
Highest physics degree offered by department	Number of depts.	Percent of depts.	Degrees by department		
			Percent of degrees	Average	Median
Bachelor's	511	67	43	4.8	3
Master's	62	8	6	6.0	5
PhD	181	25	51	16.2	12

Note: There are an additional 8 PhD-granting and 1 master's-granting physics department that do not offer a bachelor's degree.

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

The number of physics bachelor's produced by a department is influenced by the highest degree the department offers.

Figure 3



The number of physics bachelor's conferred at doctoral-granting departments has increased 74% since the class of 1999.

Gains in bachelor's degree production have occurred at each department type. Since 1999, bachelor's degree production at departments where the PhD is the highest physics degree offered have increased by 74%. During the same time period bachelor's-only departments increased by 44%. Bachelor's degree production at master's-granting departments have experienced the smallest gains, rising 35%. This increase in bachelor's degree production at master's departments has happened at a time when the number of departments in this category has dropped by 10%.

The bachelor's-only departments that averaged 10 or more physics bachelor's accounted for 11% of the undergraduate-only departments. These departments conferred 32% of the total physics bachelor's degrees in 2008.

Table 2

Bachelor's-Only Departments Averaging 10 or More Physics Bachelor's Degrees Per Year, Classes 2006 Through 2008.

	Annual Average		Annual Average
US Naval Academy (MD)	29	Franklin & Marshall Coll (PA)	12
SUNY College, Geneseo (NY)	25	Gettysburg Coll (PA)	12
Harvey Mudd College (CA)	24	Lawrence U (WI)	12
Loyola U of Chicago (IL)	22	Taylor U (IN)	12
US Air Force Academy (CO)	22	Macalester College (MN)	12
Carleton College (MN)	20	U of Northern Colorado	12
U of Wisconsin, La Crosse	20	Xavier U (LA)	12
Illinois State U	19	Amherst College (MA)	11
CA Poly St U, San Luis Obispo	18	Fordham U (NY)	11
Bethel College (MN)	17	Furman U (SC)	11
Colby College (ME)	17	Longwood U (VA)	11
Reed College (OR)	17	Oberlin College (OH)	11
Grinnell College (IA)	15	Rochester Inst of Tech (NY)	11
Gustavus Adolphus Coll (MN)	15	The College of New Jersey	11
James Madison U (VA)	15	Union College (NY)	11
Middlebury Coll (VT)	15	Weber State U (UT)	11
Western Washington U (WA)	15	Beloit College (WI)	10
Williams College (MA)	15	Bowdoin College (ME)	10
Bucknell U (PA)	14	Colgate U (NY)	10
U of Wisconsin, Eau Claire	14	Dickinson College (PA)	10
CA State Poly U, Pomona	13	Ithaca Coll (NY)	10
Saint Olaf College (MN)	13	Murray State U (KY)	10
Swarthmore Coll (PA)	13	Truman State U (MO)	10
US Military Academy (NY)	13	U of Puerto Rico, Humacao	10
Whitman Coll (WA)	13	U of Puget Sound (WA)	10
College of Charleston (SC)	12	U of Saint Thomas (MN)	10
Colorado College (CO)	12	Wellesley College (MA)	10

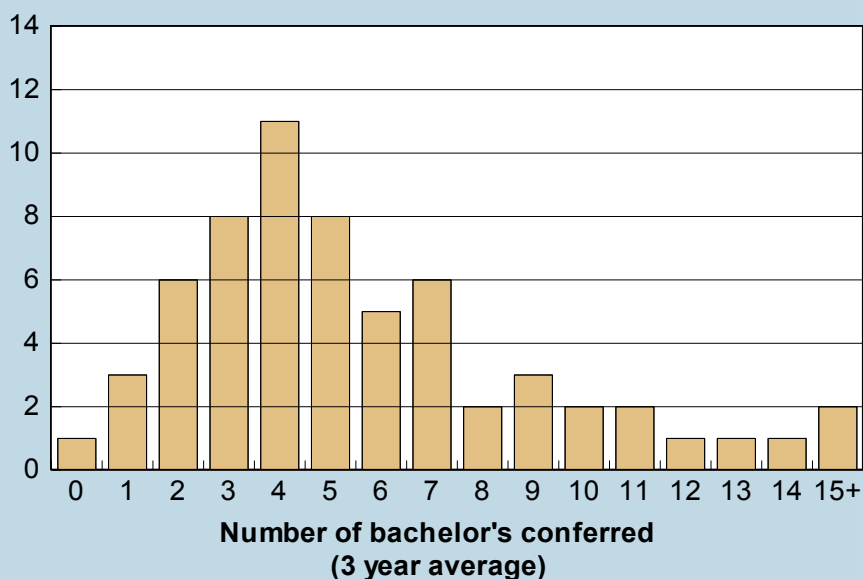
Note: List includes only those departments that offered a bachelor's as their highest physics degree in 2008 and contributed degree data for all 3 years.

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

Figure 4

Number of Master's-Granting Departments by the Number of Bachelor's Conferred, Classes 2006 Through 2008.

Number of departments



Note: Figure includes 62 departments where the master's was the highest physics degree offered in 2008.

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

The 62 master's-granting departments conferred 6 % of the physics bachelor's degrees in the class of 2008.

The undergraduate physics programs at departments that offer a master's as their highest degree tend to confer more bachelor's than departments that offer only the bachelor's but confer significantly fewer bachelor's than the undergraduate programs at doctoral-granting departments. The master's granting departments averaged six bachelor's a year with the typical department conferring between four and seven bachelor's degrees.

Table 3**Master's-Granting Departments Averaging 7 or More Physics Bachelor's Degrees Per Year, Classes 2006 Through 2008.**

	Annual Average
Appalachian State U (NC)	18
Miami U (OH)	16
Virginia Commonwealth U	13
Northern Arizona U	12
SUNY-Binghamton U (NY)	11
U of Puerto Rico, Mayaguez	11
Stephen F Austin State U (TX)	10
Ball State U (IN)	9
California State U, Northridge	9
U of Central Oklahoma	8
U of Louisville (KY)	8
CA State U, Fresno	7
City College (NY)	7
Eastern Michigan U	7
Missouri State U	7
San Diego State U (CA)	7

*These departments
accounted for 45% of
all the bachelor's
awarded by master's-
granting physics
departments.*

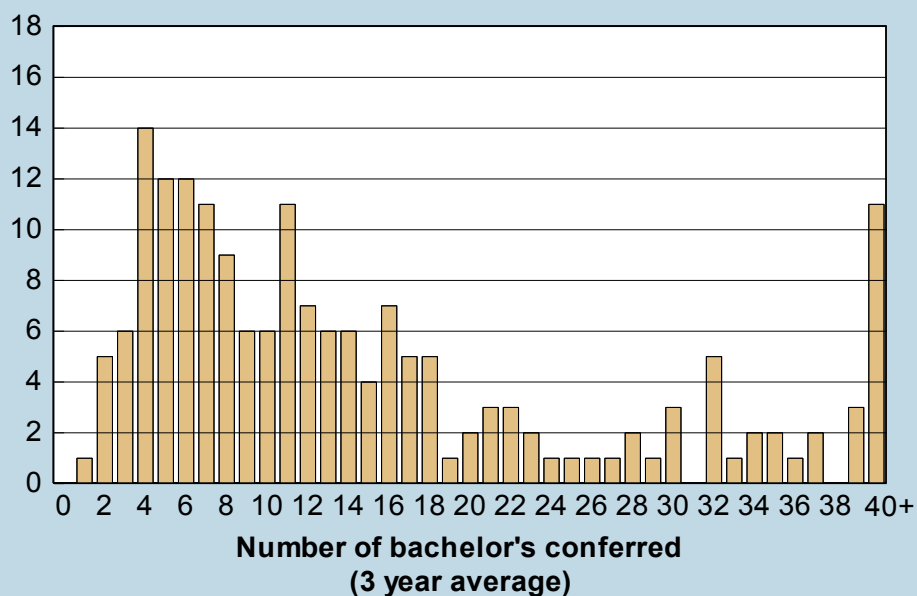
Note: List includes only departments that offered a master's as their highest physics degree in 2008 and contributed degree data for all 3 years.

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

Figure 5

Number of Doctoral-Granting Departments by the Number of Bachelor's Conferred, Classes 2006 Through 2008.

Number of departments



Note: Figure includes 181 PhD-granting physics departments that offered a physics bachelor's degree in 2008.

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

There were 11 PhD-granting departments that averaged over 40 bachelor's in physics. These departments were responsible for awarding 11% of all physics bachelor's conferred.

Bachelor's degree production at doctoral-granting departments tend to be more variable and considerably greater than degree production at departments where the bachelor's and master's are the highest physics degree offered. These departments had an average of 16.2 bachelor's degrees conferred and a median of 12.

Table 4

PhD-Granting Departments Averaging 20 or More Physics Bachelor's Degrees Per Year, Classes 2006 Through 2008.

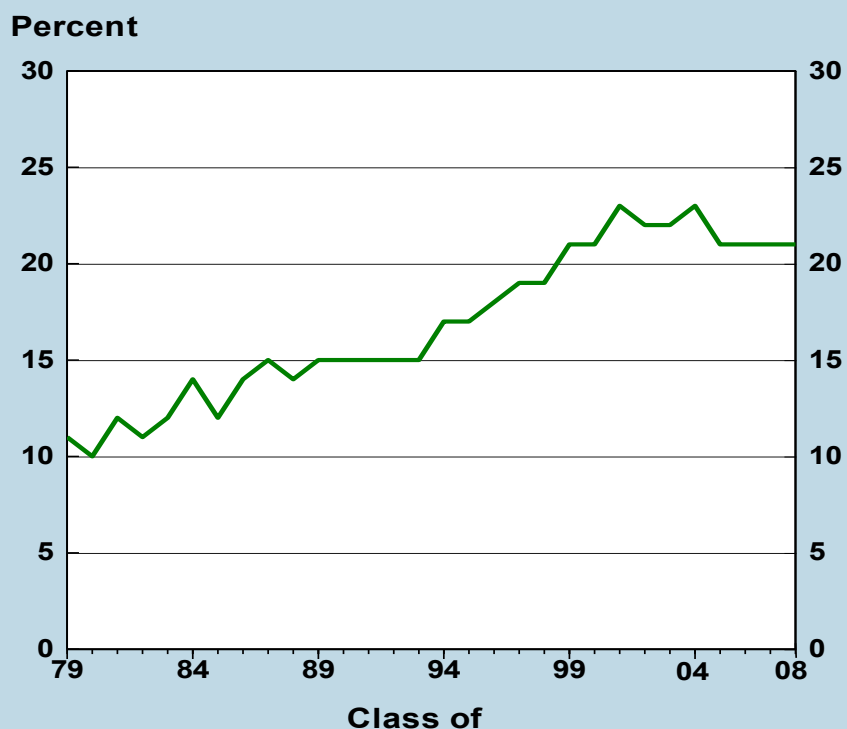
	Annual Average		Annual Average
Mass. Inst. of Technology	85	U of California, Santa Barbara	32
U of California, Berkeley	70	U of Colorado, Boulder	32
U of Washington	58	U of MN, Minneapolis	32
Brigham Young U (UT)	56	Purdue U, West Lafayette (IN)	30
Colorado School of Mines	56	Stanford U (CA)	30
U of IL, Urbana/Champaign	54	U of Arizona	30
U of Maryland, College Park	49	U of California, Santa Cruz	29
U of California, Los Angeles	46	U of California, Davis	28
U of California, San Diego	44	Yale U (CT)	28
Ohio State U	43	Michigan State U	27
U of Michigan, Ann Arbor	39	Princeton U (NJ)	26
U of Utah	39	Rensselaer Polytech Inst. (NY)	25
U of Wisconsin, Madison	39	Columbia U (NY)	24
U of Chicago (IL)	37	Boston U (MA)	23
U of Virginia	37	U of Rochester (NY)	23
U of Texas, Austin	36	North Carolina State U	22
Rutgers U, New Brunswick (NJ)	35	U of California, Irvine	22
U of Florida	35	U of Oregon	22
Carnegie Mellon U (PA)	34	College of William & Mary (VA)	21
Pennsylvania State U	34	Georgia Inst of Tech	21
Cornell U (NY)	33	U of California, Davis-Applied	21
California Inst. of Technology	32	Arizona State U	20
Cornell U-Applied (NY)	32	Portland State U (OR)	20

Note: List includes only departments that offered a PhD as the highest physics degree in 2008 and contributed degree data for all 3 years.

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

Figure 6

Percent of Physics Bachelor's Degrees Earned by Women, Classes 1979 Through 2008.



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

The representation of women among physics bachelor's degree recipients (21%) has not changed in nearly a decade.

After many years of steady gains, the representation of women among physics bachelor's has remained unchanged for nearly a decade. Physics has one of the lowest representations of women among the undergraduate science disciplines.

There were 18 women's colleges in the US with undergraduate physics programs in 2008. The women receiving physics bachelor's from these departments represent 4% of all the women receiving physics bachelor's in the class of 2008.

The representation of African Americans and Hispanic Americans among physics bachelor's remained low. African Americans earned 10% of the bachelor's degrees awarded in all fields during the 2007-08 academic year. Among physics bachelor's their representation was considerably lower with less than 3% being earned by African Americans. The picture is similar for Hispanic Americans. Eight percent of all bachelor's in the class of 2008 were earned by Hispanic Americans, but they represented just over 3% of physics bachelor's. Of all the sciences, physics has one of the lowest representations of Hispanic American and African American undergraduate degree recipients.

Table 5

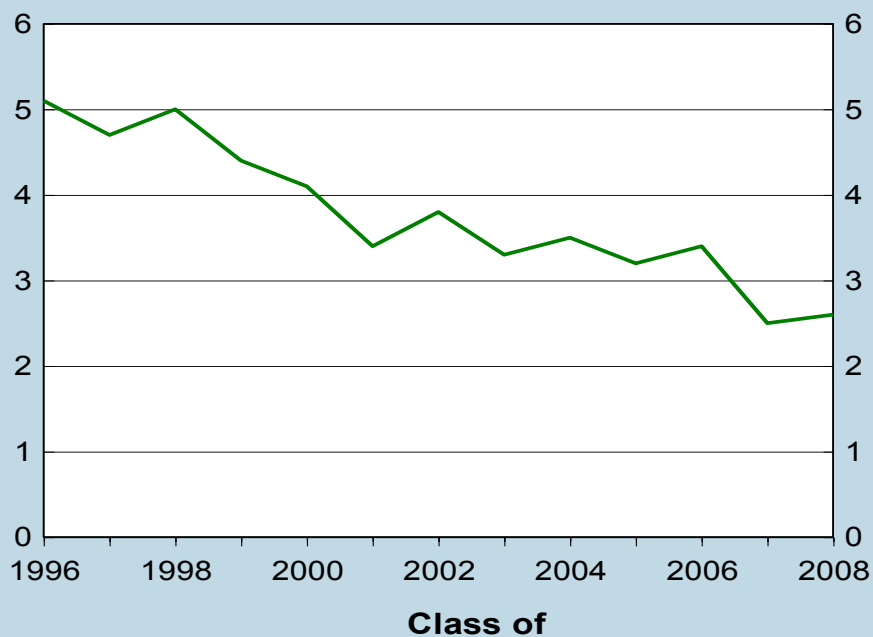
**Racial and Ethnic Break-Down of Physics Bachelor's,
Class of 2008.**

	Number	Percent of all Physics Bachelor's
White	4,718	82
Asian American	282	5
Hispanic American	199	3
African American	150	3
Other US citizens	52	1
Non-US citizens	368	6
Total	5,769	100%

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

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

Figure 7

Percent of Physics Bachelor's Degrees Earned by African Americans, Classes 1996 Through 2008.**Percent**<http://www.aip.org/statistics>

The representation of African-Americans among physics bachelor's has been steadily declining for the last dozen years.

The combination of fewer African Americans receiving physics bachelor's degrees and the recent sharp increase in the total number of physics bachelor's degrees awarded has resulted in a steady decline in the representation of African Americans. The physics bachelor's class of 2008 was comprised of 2.5% African Americans, unchanged from the previous year.

Historically Black Colleges and Universities (HBCUs) contributed significantly to the overall number of African Americans who received physics bachelor's degrees each year. Among the 755 departments that offered an undergraduate physics degree in the US, 34 (4.5%) were located at an HBCU.

Forty-one percent of all African Americans receiving a physics bachelor's degree in the class of 2008 had attended an HBCU. Although this is a significant contribution, this proportion has been declining in recent years. A decade ago, about 60% of the physics bachelor's who were African American received their degree from an HBCU. The proportion of physics bachelor's who graduated from non-HBCUs who were African American has remained relatively unchanged for the past decade, at around 1.5%.

Table 6

Departments Averaging 3 or More African American Physics Bachelor's Per Year, Classes 2006 Through 2008.

	Annual Average
Xavier U (LA)*	11
Morgan State U (MD)*	6
Benedict College (SC)*	3
Howard U (DC)*	3
Jackson State U (MS)*	3
U of Maryland, College Park	3

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

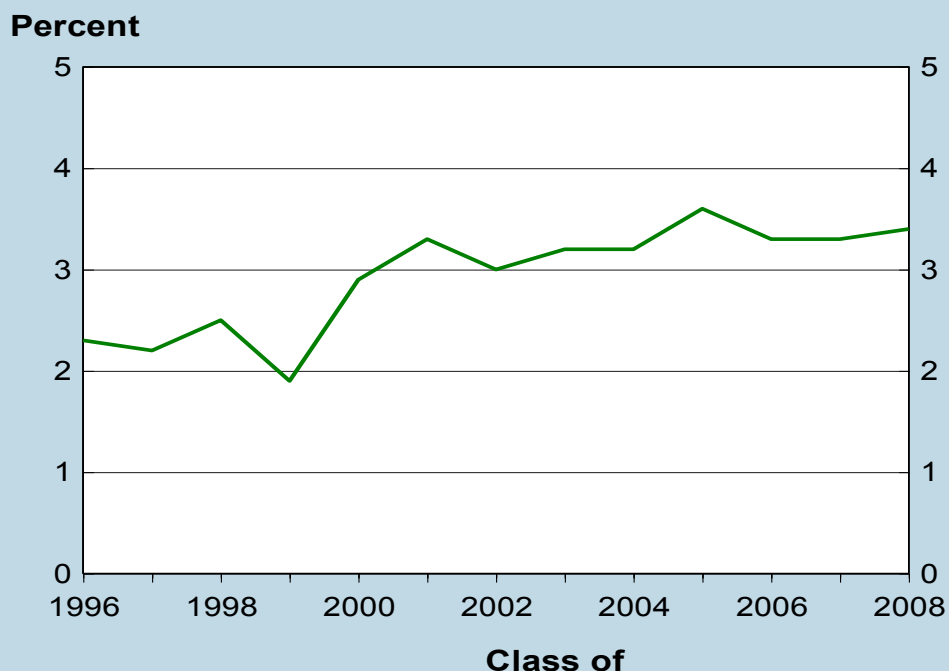
***Historically Black College and University**

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

With the exception of University of Maryland, the departments that produced the largest number of African Americans with physics bachelor's were all located at HBCUs.

Figure 8

**Percent of Physics Bachelor's Who Were Hispanic American,
Classes 1996 Through 2008.**



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

*During the last 8 years
the representation of
Hispanics among
physics bachelor's
recipients has remained
between 3 and 4%.*

Similar to the African American population in the US, the Hispanic population is not evenly distributed across the country. Instead of being concentrated at specific universities, a disproportionate number of physics bachelor's who were Hispanic Americans received their degrees from states where there were larger Hispanic populations, as well as from Puerto Rico. The states with the largest proportions of Hispanic Americans among their physics bachelor's in the class of 2008 were: Florida, New Mexico, California, and Texas. Puerto Rico, which has 3 degree-granting physics departments, was responsible for producing 8% of all the Hispanic Americans in the class of 2008.

Appendix 1. Physics Bachelor's Degrees Conferred, Academic Years 1998-2008.

Academic year	Total	<u>Highest physics degree offered by department</u>		
		Bachelor's	Master's	PhD
1998-1999	3,646	1,683	275	1,688
1999-2000	3,894	1,688	335	1,871
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

<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, collecting data from the 754 departments that granted bachelor's degrees in the class of 2008, had a 97% response rate. Estimates were derived and included in the totals for non-responding departments.

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 2008. This report can be found on our web site:

<http://www.aip.org/statistics/trends/archives/physrost08.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.