

African Americans & Hispanics among Physics & Astronomy Faculty

Results from the 2012 Survey of Physics & Astronomy Degree-Granting Departments

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**REPORTS
ON PHYSICS
&
ASTRONOMY
FACULTY**

**African Americans
& Hispanics
among Physics &
Astronomy
Faculty (7/2014)**

Number of Physics
Faculty
(Forthcoming)

Astronomy Faculty
(Forthcoming)

Hiring in Physics &
Astronomy
Departments
(Forthcoming)

**THE 2012
SURVEY OF
PHYSICS &
ASTRONOMY
DEGREE-
GRANTING
DEPARTMENTS**

During the spring semester of 2012, we contacted all of the departments in the US that offered at least a bachelor's degree in physics and/or astronomy. These reports describe our findings.

Minority Faculty Members in Physics

The United States is becoming more and more diverse, but the representation of some minority groups in physics and astronomy lags behind. Although 13% of the US population is African American or black, and 17% is Hispanic (US Census), the representation of these two groups in physics and astronomy is much lower. For this reason, African Americans and Hispanics are considered under-represented minorities (URMs) in physics and astronomy. Furthermore, the representation of Native Americans in physics and astronomy is so low that data often cannot be reported reliably.

AIP collects data on the ethnicity of physics and astronomy faculty members every four years. This report summarizes the African-American and Hispanic presence among these faculty members as of 2012.

Table 1

Race and Ethnicity of Physics Faculty

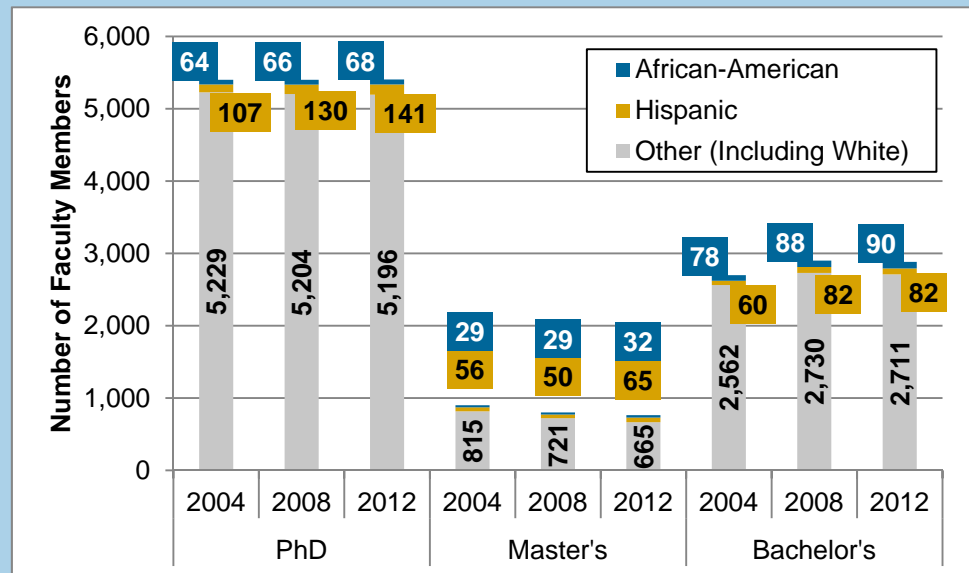
	Physics			All Disciplines*
	2004 (%)	2008 (%)	2012 (%)	2009 (%)
African-American	2.0	2.2	2.1	6.6
Asian	10.6	13.2	14.3	6.0
Hispanic	2.7	3.1	3.2	4.0
White	82.2	80.0	79.2	74.9
Other	2.2	1.5	1.2	0.5

* Data for all disciplines (which includes non-science disciplines) found at <http://nces.ed.gov/fastfacts/display.asp?id=61>

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Figure 1

Number of African-American and Hispanic Physics Faculty by Highest Degree Awarded by Department, 2012



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In 2012, there were 288 Hispanic and 190 African-American faculty members in physics departments.

As **Table 1** (front page) shows, the percentage of physics faculty members who are Hispanic has been increasing, reaching about 3% in 2008 and 2012, while the percentage of physics faculty members who are African American has remained relatively constant, at about 2%.

The representation of these URMs on the faculty is very similar to their representation among physics and astronomy doctoral recipients. For example, in 2012, African Americans earned just over 2% of physics PhDs, and Hispanics earned between 3-4% of physics PhDs in the U.S. (AIP's Enrollments and Degrees Survey). The percentage of physics doctorates earned by Hispanics has been growing since 2000, while the percentage earned by African Americans has remained relatively flat.

Similarly, the number of Hispanic faculty members in physics has increased much more quickly than the number of African-American faculty members. The number of Hispanic faculty members has increased 29% since 2004, reaching a total of 288 in 2012. The number of African-American faculty members has grown at a more modest 11% over the same period, with most of that increase at Bachelor's-granting departments (**Figure 1**). In 2012, there were 190 African-American and 288 Hispanic physics faculty members in the US.

Where Do Minority Physics Faculty Work?

There is significant clustering of African-American faculty members at Historically Black Colleges and Universities (HBCUs). About half (89 of 190) of African-American physics faculty members are employed by physics departments at HBCUs, which account for only 4% (30 of 746) of all physics departments. Half of all African-American physics faculty members work at just 23 departments, meaning that most physics students will never see a black faculty member.

On the other hand, half of all Hispanic physics faculty members work at 46 departments. Although the departments with the largest number of Hispanic physics faculty members are in Puerto Rico and Texas, we do not see significant clustering of Hispanic faculty members in certain types of departments.

Table 2

Number of Physics Departments with African-American and Hispanic Faculty by Highest Degree Awarded, 2012

Number of Departments that have ...	Highest Degree Awarded			Total
	PhD	Master's	Bachelor's	
<u>both</u> African-American & Hispanic faculty	16	3	9	28
African-American faculty (and <u>no</u> Hispanic faculty)	19	11	47	77
Hispanic faculty (and <u>no</u> African-American faculty)	79	23	56	158
<u>neither</u> African-American <u>nor</u> Hispanic faculty	78	24	381	483
Total	192	61	511	746

Only 28 physics departments have both African-American and Hispanic faculty members.

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A large proportion of African-American physics faculty members works at HBCUs, and two-thirds of all HBCU physics departments grant bachelors as their highest degree. Consequently, about half of all African-American faculty members work at bachelors departments, compared to 28% of Hispanic faculty members. Likewise, a smaller proportion of African Americans work at departments that grant PhDs (36%) than do Hispanics (49%). Compared to the 60% of all physics faculty members that work at PhD-granting departments, both Hispanic- and African-American physics faculty are under-represented among PhD-granting departments.

Minorities in Astronomy Departments

In 2012, the 38 departments that award degrees only in astronomy had 670 FTE faculty members. These departments have a lower percentage of URM faculty members than physics departments do. The percentages of URM faculty members in both physics and astronomy are noticeably lower than the average across all disciplines (Table 3, below). Out of 38 stand-alone astronomy departments, 21 had neither black nor Hispanic faculty members (Table 4, next page).

Table 3

Under-Represented Minorities Among Astronomy Faculty, 2012

Degrees Awarded by Department	African American %	Hispanic %
Astronomy only	1	2
Physics	2	3
All Disciplines [†]	7	4

[†] Data for all disciplines (which includes non-science disciplines) found at <http://nces.ed.gov/fastfacts/display.asp?id=61>

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The percentages of URM faculty members in both physics and astronomy are noticeably lower than the average across all disciplines.

Table 4**Number of Departments that Award Degrees only in Astronomy with African-American and Hispanic Faculty, 2012**

Number of Departments that have ...	
<u>both</u> African-American & Hispanic faculty	0
African-American faculty (and <u>no</u> Hispanic faculty)	7
Hispanic faculty (and <u>no</u> African-American faculty)	10
<u>neither</u> African-American <u>nor</u> Hispanic faculty	21
Number of Departments (Total)	38

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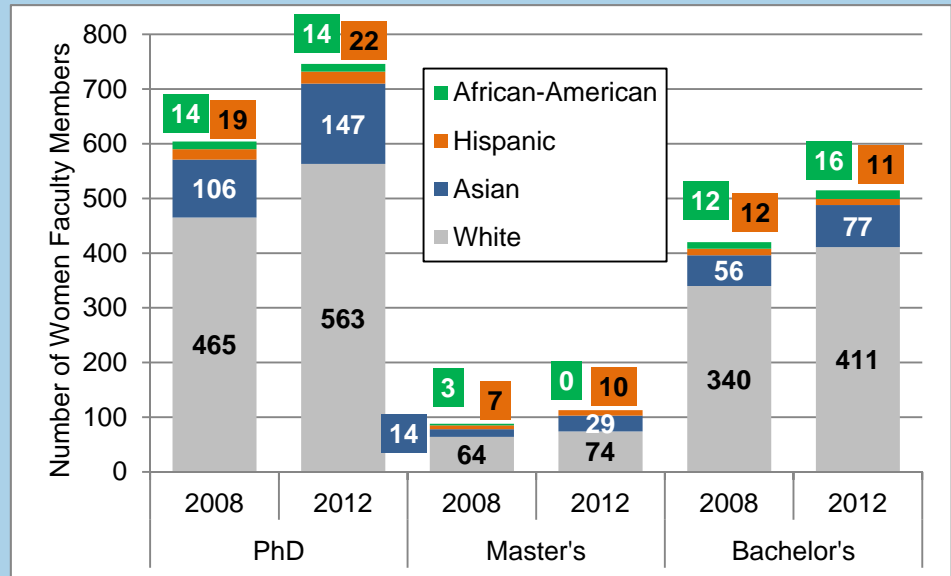
Women Faculty Members of Color

Given the very low numbers of URM faculty members in physics departments, it will come as little surprise that there are even fewer faculty members who are women of color (WOC). To document these numbers, AIP began collecting data in 2008 on the number of WOC faculty members in astronomy and physics departments (**Figure 2**, next page). The numbers for Asian-American women are shown, too, although they are not under-represented in science. We have included astronomy departments to be comparable with earlier published numbers (CSWP Gazette). The actual number of WOC faculty members in the stand-alone astronomy departments is four (one African-American woman and three Hispanic women).

Recall that the number of Hispanic physics faculty members of both sexes has been increasing more quickly than the number of black faculty members (**Figure 1** on p. 2). Similarly, the number of Hispanic female faculty members in physics and astronomy shows a greater increase than the number of African-American women. Since 2008, there are five more Hispanic female faculty members, but only one more African-American woman in physics and astronomy departments.

Figure 2

Number of Women in Physics and Astronomy Departments, 2012 by Race and Highest Degree Awarded



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There are fewer than 75 female physics and astronomy faculty members who are either African-American or Hispanic in the entire U.S.

Conclusion

This report has examined the representation of under-represented minority faculty members in physics and astronomy departments. Documenting the low number of minority faculty members is important, but does not present the whole picture. Counting numbers of faculty members cannot tell us about the everyday experiences and workplace environments of academic physicists. It also does not tell us about possible inequities in salaries and in promotion and tenure rates. Representation of URMs on physics and astronomy faculties could increase in the future, but URM faculty members could still experience less than desirable situations on the job. Focusing on representation alone also does not tell us reasons for any inequities among faculty members that we may observe. More data are needed about the working lives of URM faculty members in order to document additional areas of needed change.

References

US Census data are available at www.census.gov/data.html.

Enrollments and Degrees Survey, American Institute of Physics, Statistical Research Center. This survey is conducted annually. Data are presented in the astronomy and physics rosters and in other publications. See www.aip.org/statistics/undergraduate and www.aip.org/statistics/graduate for the most recent reports and rosters. In addition, rosters are available online annually back through 1980.

“Women of Color in Physics Departments: A Data Snapshot,” by Rachel Ivie. *CSWP Gazette*, APS Committee on the Status of Women in Physics of the American Physical Society, Spring 2010, Vol. 29, No. 1. All issues of the *Gazette* are available for download at <http://www.aps.org/programs/women/reports/gazette/>.

Survey Methodology

Between March and June 2012, we contacted each of the 785 departments (747 physics departments and 38 departments that award degrees only in astronomy) that award at least a bachelor's degree in physics or astronomy. We sent multiple follow-up contacts via e-mail and mail to departments that had not yet responded. We received responses from 745 departments (95%). Thanks to Arnell Garrett for her contributions to this report. We offer our sincere gratitude to the responding departments. Without your help, we could not track these data.

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