Seminar Discussion on Systemic Anti-Black Racism and its Impacts in STEM

Graphics Credit: Emily Rasmussen

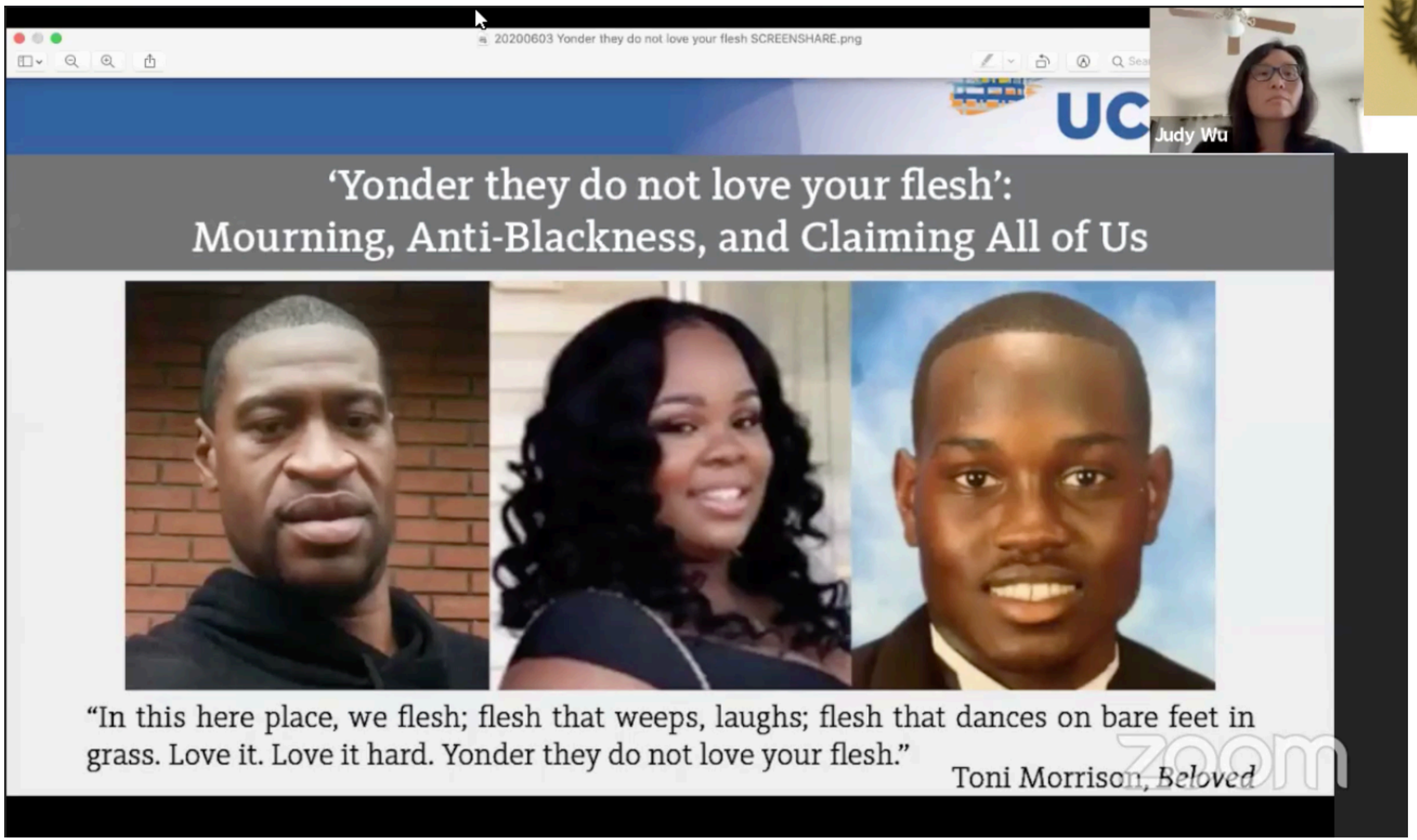
Professor Judy Tzu-Chun Wu

Director of the Humanities Center

Professor of Asian American Studies

Chancellor’s Fellow

UCI Humanities Center Panel on Anti-Blackness Violence (2020/6/3)



Very powerful panel discussions by Professors Jessica Millward, Sabrina Strings, and Tiffany Willoughby-Herard, moderated by Professor Judy Tzu-Chun Wu.

Ground Rules

- **Be Seen.** Use “raise hand” tool in Zoom. When it is your turn, you will be called and unmuted.

- **Be Respectful.** The Discussion and Town Hall should be a place where we listen and converse with respect and empathy. We ask the participants to be thoughtful and respectful when making comments.

- **Be Relevant.** The focus of the Seminar Discussion is to educate ourselves. The core purpose of the Town Hall is to make action plans. It is important for the participants to adhere to the focus of the sessions when making comments.

- **Take Responsibility.** A careful examination about racial injustice and taking meaningful actions against it are long over due. It is especially important for the non-POC members to recognize this. The conversation will be difficult and we ask the participants to please bring an open mind, own the responsibilities, and strive our best to do better.

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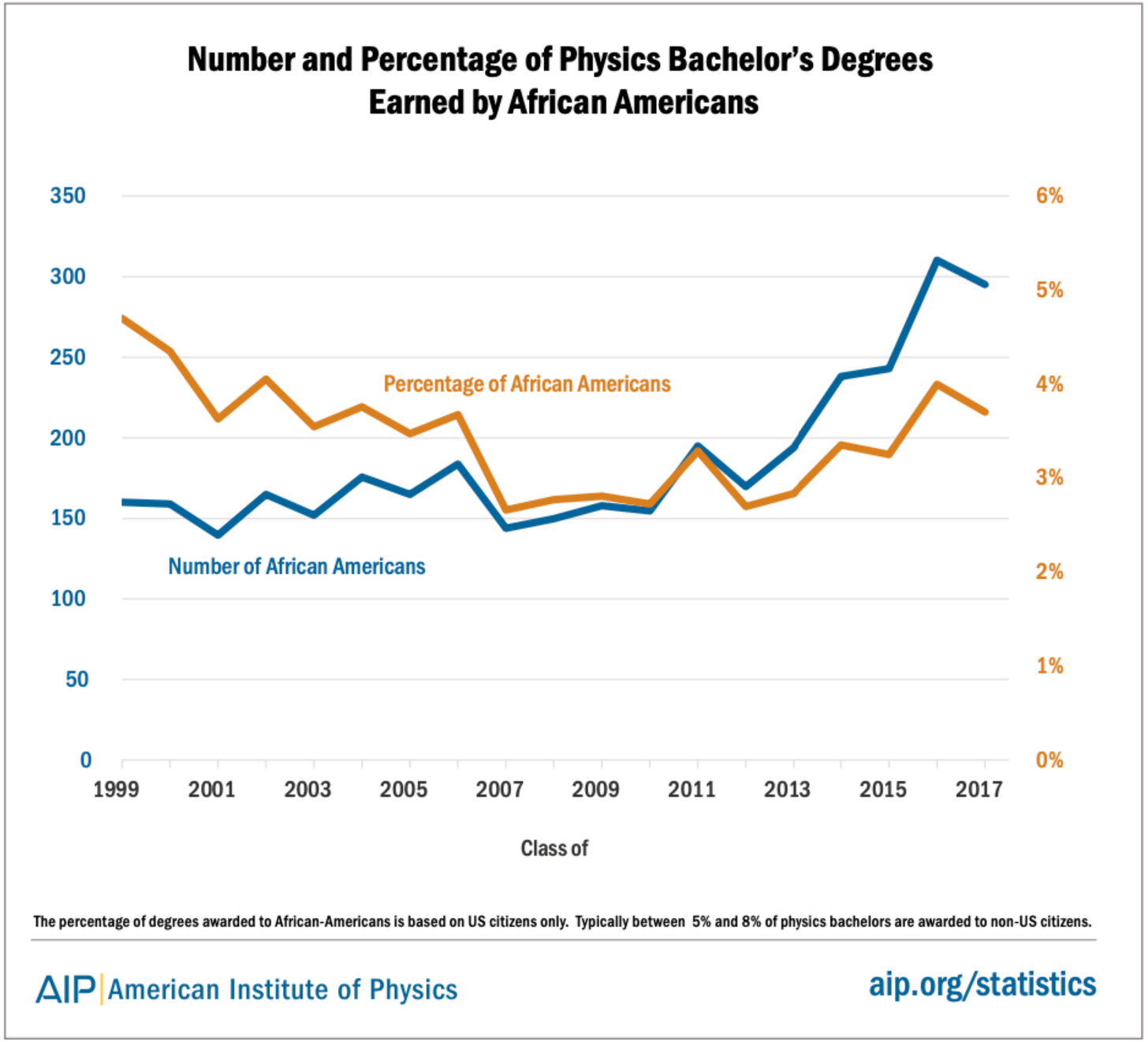
Graphics Credit: AIP TEAM-UP report

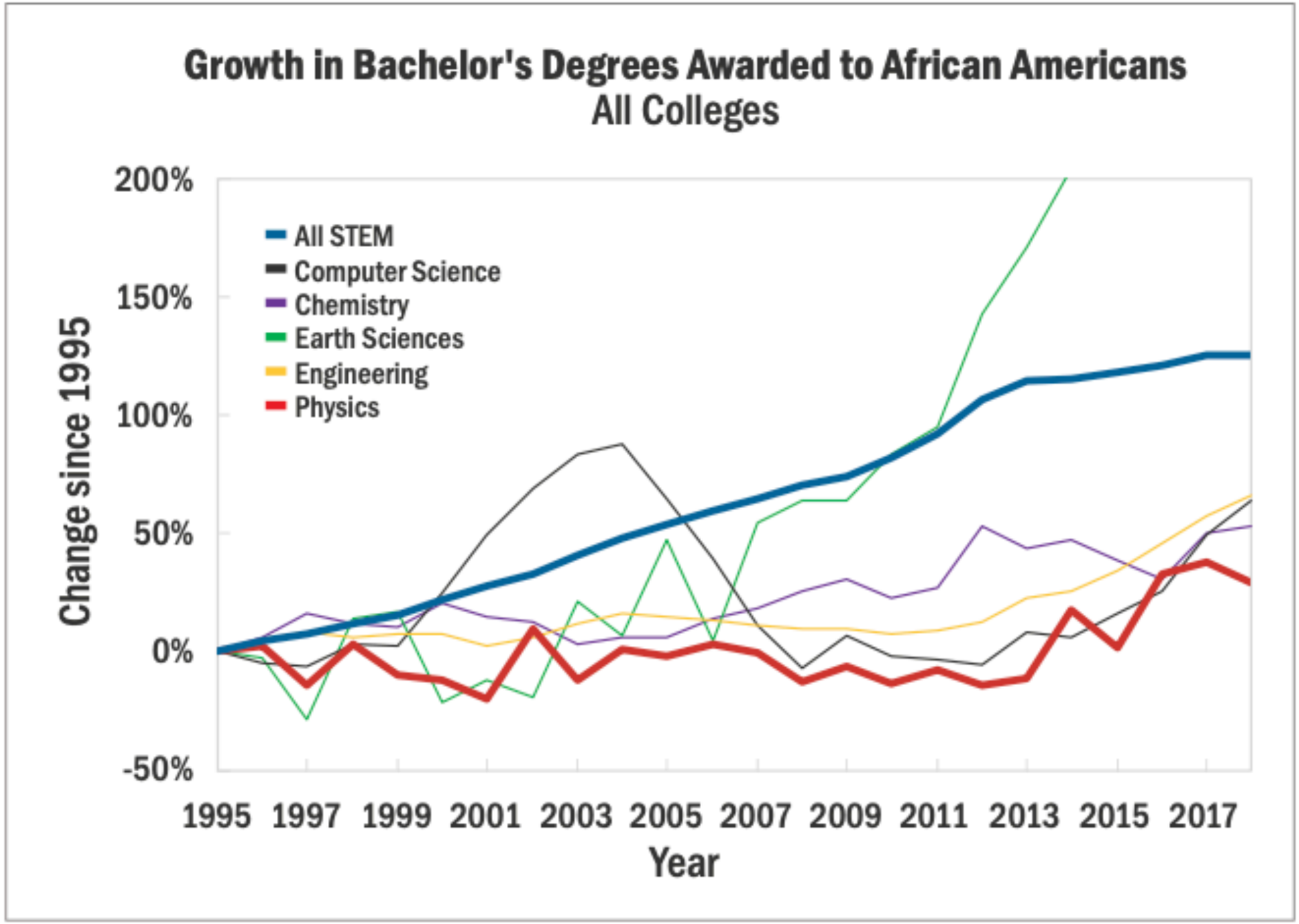
Impacts in Physics, Astronomy, and other STEM Fields

Mu-Chun Chen
Department of Physics and Astronomy

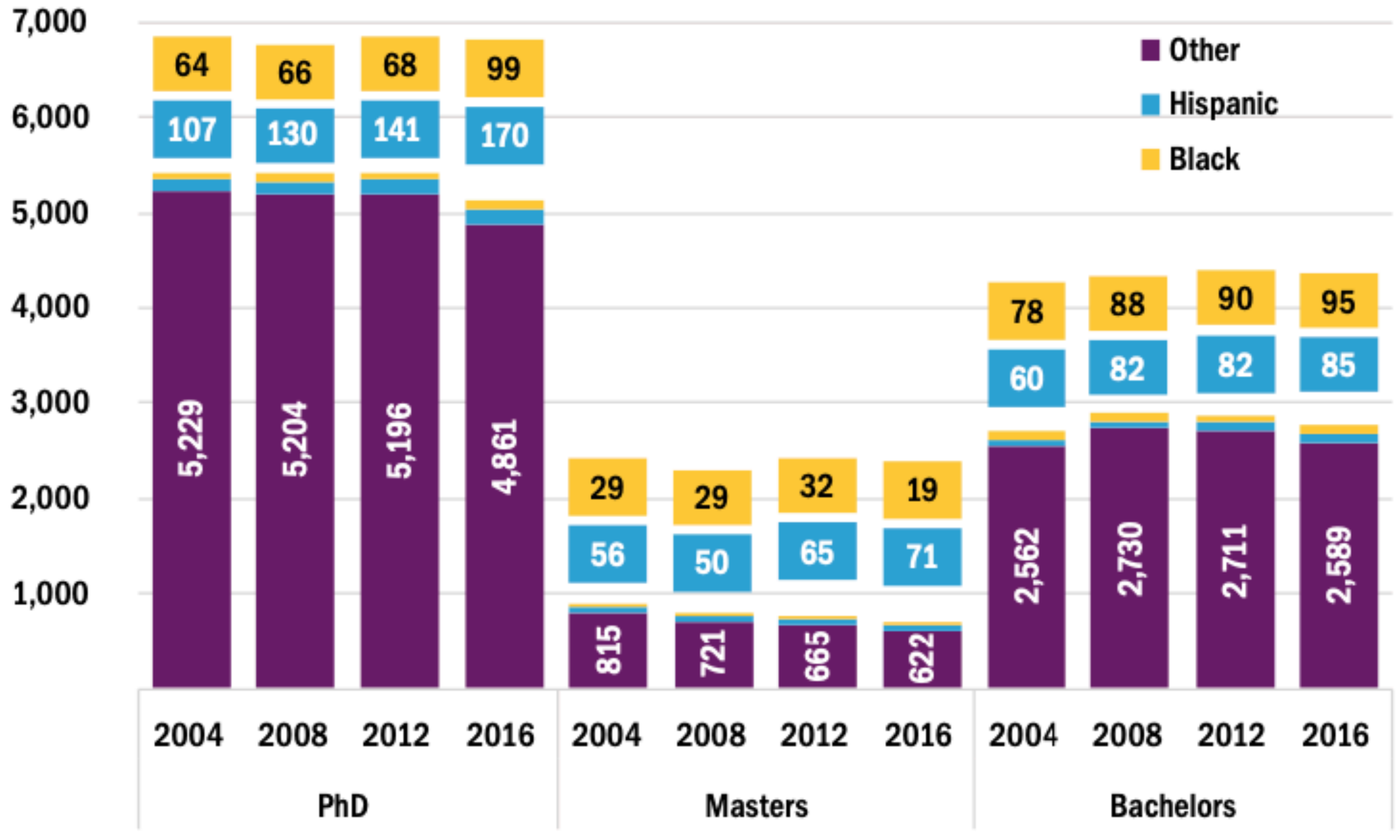

Number and Percentage of Physics Bachelor's Degrees Earned by African Americans
350
300
250
200
150
100
50
0
6%
5%
4%
3%
2%
1%
0%
Percentage of African Americans
Number of African Americans
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
Class of
The percentage of degrees awarded to African-Americans is based on US citizens only. Typically between 5% and 8% of physics bachelors are awarded to non-US citizens.
AIP | American Institute of Physics
aip.org/statistics

Number of Bachelor's Degrees Earned by African-Americans in Physical Science Fields, 2005 and 2015

	Total Number of Degrees Earned by All Students		Number of Degrees Earned by African Americans	
	Degrees in 2015	Percent Change 2005 to 2015	Degrees in 2015	Percent Change 2005 to 2015
Earth Sciences	6,387	94%	146	165%
Atmospheric Sciences	740	9%	14	75%
Chemistry	15,567	46%	1,036	31%
Physics	7,329	57%	175	4%
Astronomy	480	25%	10	67%
Oceanography	265	91%	9	29%
Other Physical Sciences	759	32%	62	72%
All Physical Sciences	31,527	55%	1,452	36%


Growth in Bachelor's Degrees Awarded to African Americans
All Colleges
200%
150%
100%
50%
0%
-50%
Change since 1995
All STEM
Computer Science
Chemistry
Earth Sciences
Engineering
Physics
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
Year

Number of African American and Hispanic Physics Faculty Members by Highest Degree Offered by Department, 2004-2016



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Number of Black Undergraduate Students: UCI Physics & Astronomy

	Fall										10 Year
Ethnicity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
Asian / Asian American	22.8%	33.1%	31.6%	29.6%	32.5%	28.3%	24.6%	23.2%	21.5%	22.6%	26.2%
Black, non-Hispanic	0.0%	0.8%	1.5%	1.2%	0.6%	0.5%	0.4%	0.9%	0.4%	0.4%	0.6%
Hispanic	22.0%	16.5%	14.0%	13.0%	11.0%	11.7%	14.5%	13.8%	14.2%	19.7%	15.0%
Pacific Islander	0.0%	0.0%	0.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.4%	0.7%	0.3%
White, non-Hispanic	44.1%	36.2%	33.8%	28.4%	29.4%	24.4%	21.9%	25.9%	24.8%	20.4%	27.3%
Two or more ethnicities, with URM	0.0%	1.6%	0.0%	1.2%	2.5%	2.0%	2.2%	0.9%	0.4%	1.1%	1.2%
Two or more ethnicities, non-URM	0.0%	1.6%	2.9%	3.0%	3.1%	2.4%	2.6%	1.8%	1.6%	3.6%	2.4%
Unknown / declined to state	7.9%	7.9%	7.4%	5.3%	3.1%	1.0%	0.9%	2.2%	2.8%	2.9%	3.6%
International student	3.1%	2.4%	8.8%	17.8%	17.2%	29.8%	32.9%	31.2%	33.7%	28.7%	23.4%

Number of Black Undergraduate Students: UCI Applied Physics

	Fall										10 Year
Ethnicity	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
Asian / Asian American							30.0%	17.7%	28.7%	27.8%	25.6%
Hispanic							20.0%	17.7%	18.8%	22.6%	20.0%
White, non-Hispanic							20.0%	15.2%	12.9%	10.4%	12.8%
Two or more ethnicities, with URM							0.0%	1.3%	1.0%	2.6%	1.6%
Two or more ethnicities, non-URM							0.0%	6.3%	3.0%	2.6%	3.6%
Unknown / declined to state							0.0%	2.5%	0.0%	0.0%	0.7%
International student							30.0%	39.2%	35.6%	33.9%	35.7%

Number of Black Graduate Students: UCI Physics & Astronomy

Ethnicity	Fall 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10 Year Average
American Indian / Alaskan Native	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Asian / Asian American	15.5%	15.9%	16.3%	15.7%	15.9%	14.1%	11.5%	7.1%	4.2%	6.2%	12.2%
Black, non-Hispanic	1.7%	1.9%	1.0%	1.1%	0.0%	0.0%	0.0%	1.0%	1.0%	0.9%	0.9%
Hispanic	1.7%	2.8%	4.1%	4.5%	5.7%	8.2%	11.5%	14.3%	17.7%	13.3%	8.3%
White, non-Hispanic	46.6%	49.5%	53.1%	52.8%	62.5%	60.0%	59.8%	57.1%	52.1%	54.0%	54.4%
Two or more ethnicities, with URM	0.0%	0.0%	0.0%	1.1%	1.1%	1.2%	1.1%	2.0%	2.1%	0.9%	0.9%
Two or more ethnicities, non-URM	0.0%	0.0%	2.0%	2.2%	1.1%	1.2%	1.1%	2.0%	4.2%	3.5%	1.7%
Unknown / declined to state	12.1%	8.4%	7.1%	6.7%	4.5%	3.5%	2.3%	3.1%	3.1%	3.5%	5.6%
International student	21.6%	21.5%	16.3%	15.7%	9.1%	11.8%	12.6%	13.3%	15.6%	17.7%	15.9%

Number of Black Graduate Students: UCI ChaMP

Ethnicity	Fall 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10 Year Average
American Indian / Alaskan Native	0.0%	3.1%	2.9%	2.5%	2.4%	2.4%	2.6%	0.0%	0.0%	0.0%	1.8%
Asian / Asian American	11.1%	12.5%	11.4%	10.0%	11.9%	12.2%	15.4%	15.6%	15.4%	15.4%	12.9%
Black, non-Hispanic	0.0%	0.0%	2.9%	2.5%	2.4%	2.4%	0.0%	0.0%	0.0%	0.0%	1.2%
Hispanic	7.4%	6.2%	5.7%	5.0%	2.4%	0.0%	0.0%	3.1%	3.8%	11.5%	4.1%
White, non-Hispanic	55.6%	62.5%	57.1%	52.5%	45.2%	41.5%	43.6%	46.9%	50.0%	57.7%	50.6%
Two or more ethnicities, non-URM	3.7%	3.1%	2.9%	5.0%	9.5%	9.8%	10.3%	6.2%	7.7%	0.0%	6.2%
Unknown / declined to state	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
International student	18.5%	12.5%	17.1%	22.5%	26.2%	31.7%	28.2%	28.1%	23.1%	15.4%	22.9%

Graphics Credit: AIP TEAM-UP report

Why Are There So Few Black Physicists?

Co-Chairs: Mary James, Edmund Bertschinger; Brian Beckford, Tabbetha Dobbins, Sharon Fries-Britt, Sylvester James Gates, Jedidah Isler, Maria Ong, Arlisa Richardson, Quinton Williams, Philip W. "Bo" Hammer, Arlene Modeste Knowles

Reasons for so few Black/African Americans in Physics:

- A sense of belonging in the community
- Priority of existing Physics leadership
- Academic support
- Self-perception as a physicist
- Personal support

FACTOR 1: BELONGING	Fostering a sense of belonging is essential for African American student persistence and success.
FACTOR 2: PHYSICS IDENTITY	To persist, African American students must perceive themselves, and be perceived by others, as future physicists and astronomers.
FACTOR 3: ACADEMIC SUPPORT	Effective teaching and a strengths-based approach to academic support are necessary for African American student retention and success.
FACTOR 4: PERSONAL SUPPORT	Many African American students need support to offset financial burdens and stress.
FACTOR 5: LEADERSHIP AND STRUCTURES	For sustainability, academic and disciplinary leaders must prioritize creating environments, policies, and structures that maximize African American student success.