

Diversity & Inclusion in Physics

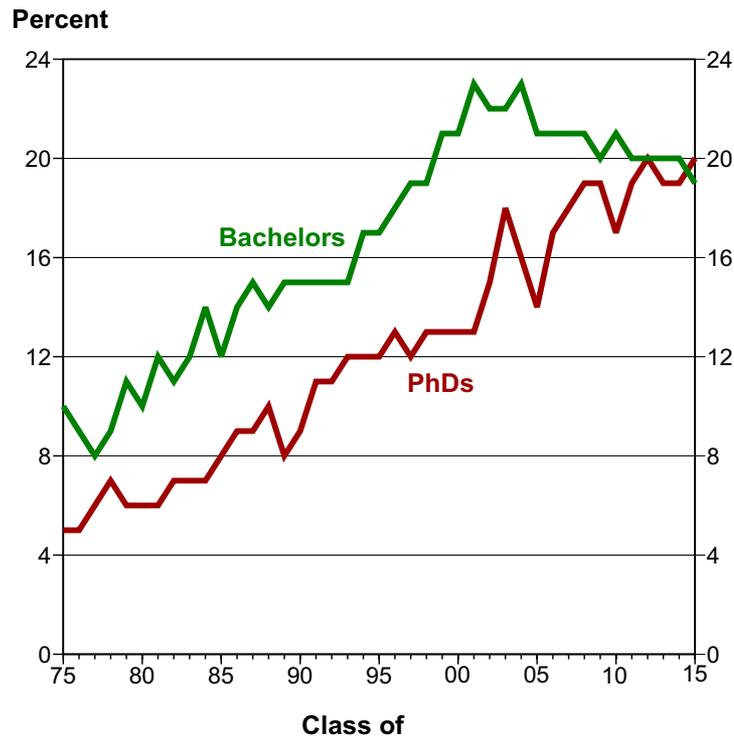
Elizabeth H. Simmons

University Distinguished Professor of Physics
Associate Provost for Faculty and Academic Staff Development
Dean, Lyman Briggs College
Michigan State University

C O N T E X T

Why are we here?

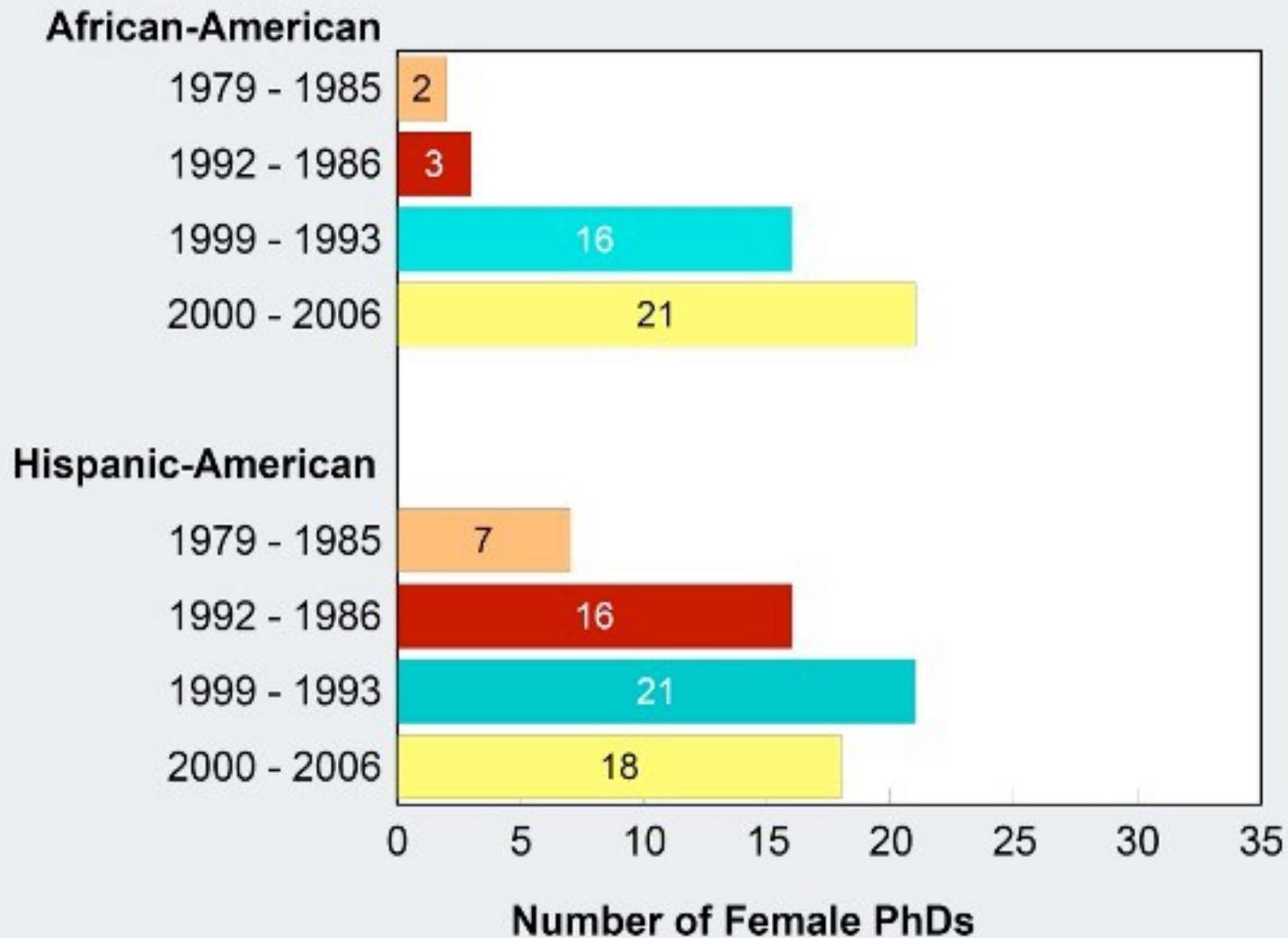
Representation of Women Among Physics Bachelors and PhDs



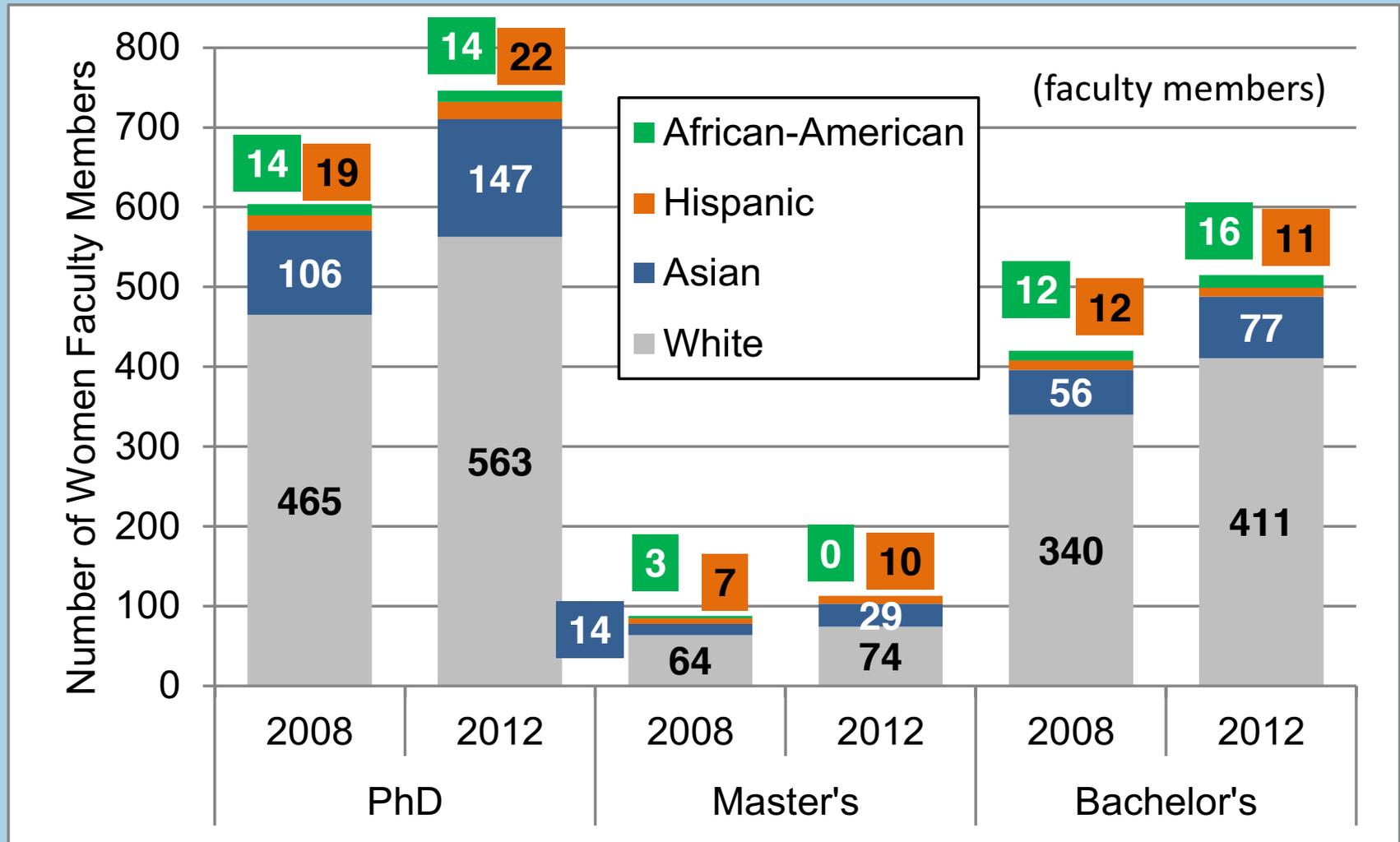
The number of women receiving physics PhDs and bachelor's degrees are both at all-time highs, 365 and 1,550 respectively. The percentage of physics PhDs awarded to women has been increasing, whereas the percentage of physics bachelors awarded to women has been declining in recent years.



Number of Hispanic and African-American female PhDs in Physics, 1979-2006.



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





whistling vivaldi

how stereotypes affect us
and what we can do

CLAUDE M. STEELE

"This is an intellectual odyssey of the first order—a true tour de force."
—WILLIAM G. BOWEN

TIMOTHY D. WILSON



Strangers to Ourselves

DISCOVERING
THE
ADAPTIVE
UNCONSCIOUS

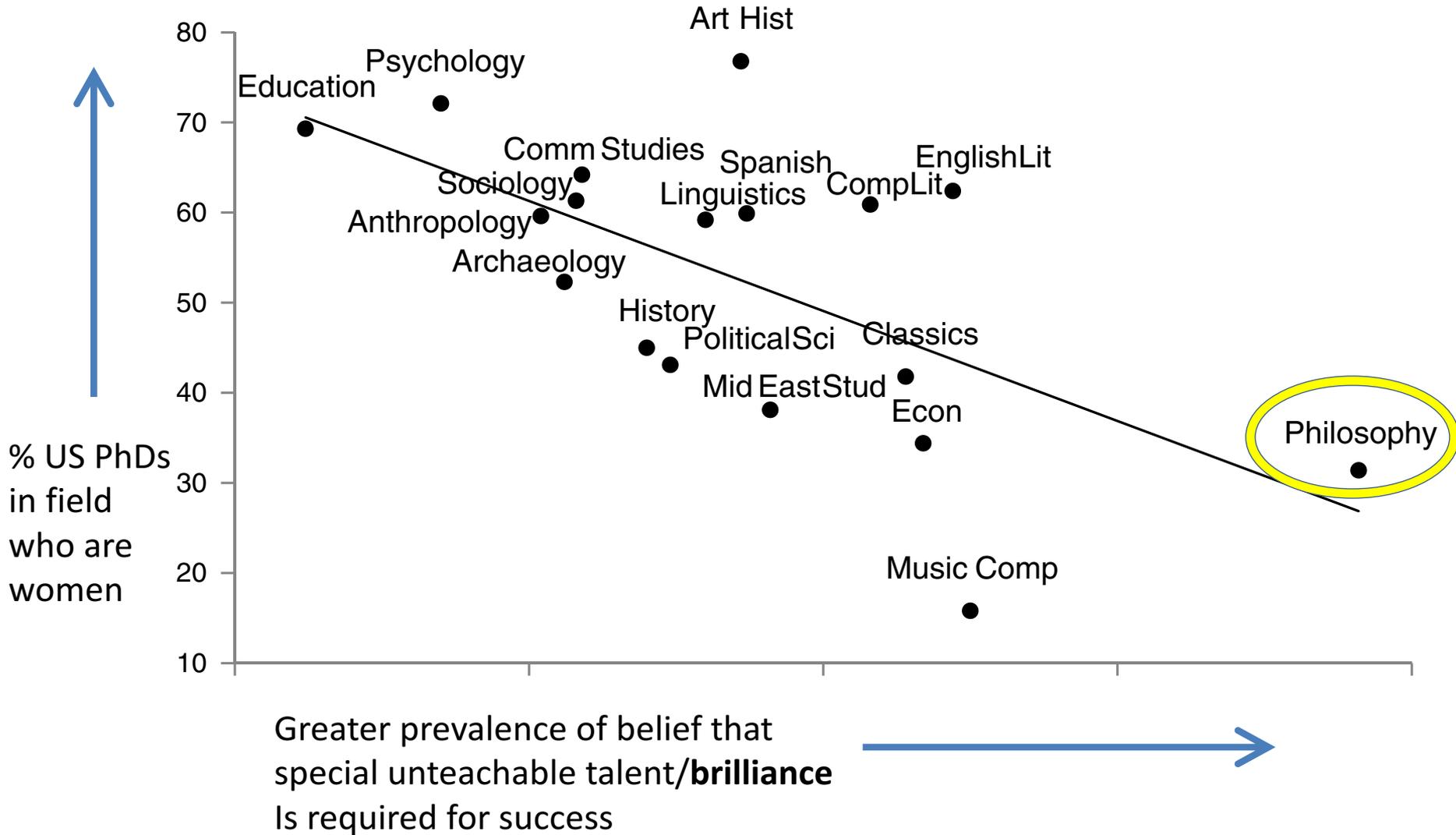
BLIND SPOT

HIDDEN BIASES
of
GOOD PEOPLE

MAHZARIN R. BANAJI
ANTHONY G. GREENWALD

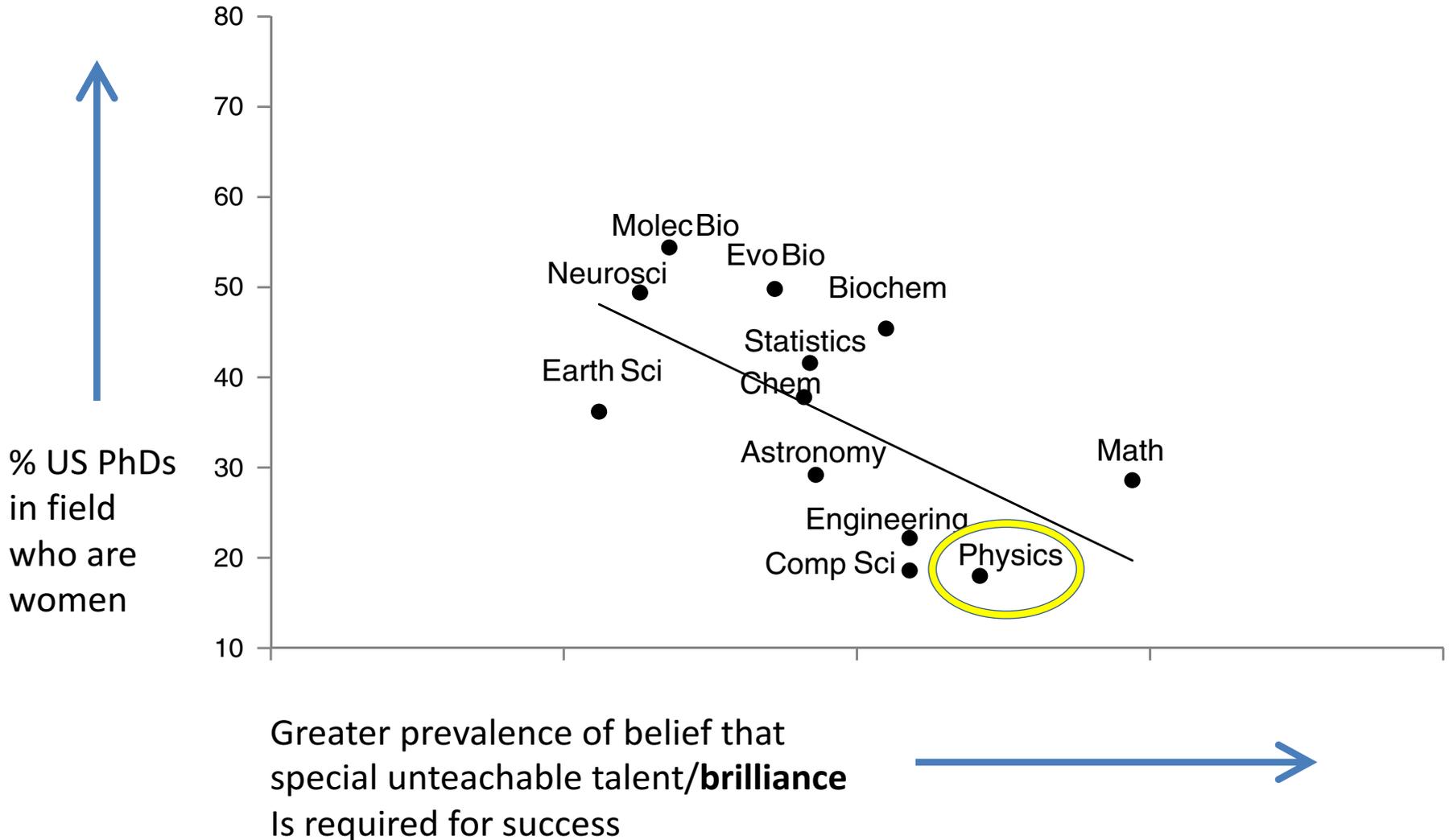
Our beliefs about pre-requisites for success are part of the problem:

Leslie et al., (2015) *Science* 346 (6129) 262-265.



Our beliefs about pre-requisites for success are part of the problem:

Leslie et al., (2015) *Science* 346 (6129) 262-265.



The Atlantic

The Problem With the GRE

The exam "is a proxy for asking 'Are you rich?' 'Are you white?' 'Are you male?'"



Team Static / fstop / Corbis

VICTORIA CLAYTON | MAR 1, 2016 | EDUCATION



SHARE



14K



9



274



Hero Images Inc. / Alamy Stock Photo

Student performance measures that don't perform

A screenshot of the Nature journal website. The header is dark red with the word "nature" in white, lowercase letters, followed by "International weekly journal of science" in a smaller font. Below the header is a navigation bar with white text on a dark background: "Home", "News & Comment", "Research", "Careers & Jobs", "Current Issue", "Archive", "Audio & Video", and "For Au". Below this is another navigation bar with white text on a dark background: "Archive", "Volume 510", "Issue 7504", "Careers", "Columns", and "Article". The main content area has a dark red background with white text. It says "NATURE | CAREERS | COLUMN" and "A test that fails" in a large font. Below that, it says "Casey Miller & Keivan Stassun" and "Affiliations". Further down, it says "Nature 510, 303–304 (12 June 2014) | doi:10.1038/nj7504-303a" and "Published online 11 June 2014". At the bottom, there are four buttons: "PDF", "Citation", "Rights & permissions", and "Article metrics". Below the buttons, it says "A standard test for admission to graduate school misses potential winners, say Casey Miller and Keivan Stassun."

Why we are here.

EXAMPLES

EXAMPLE I:

ICTP

**Career Workshops
for Women Physicists
from Developing Nations
(2013, 2015,... 2017)**

Collaborating for 30 years



Dean Shobhana Narasimhan (JNCASR, Bangalore, India)

Dean Elizabeth H. Simmons (Michigan State University, U.S.A.)



The Abdus Salam
**International Centre
for Theoretical Physics**



Career Development Workshop for Women in Physics

12 - 16 October 2015

Miramare, Trieste - Italy

Immediately Relevant Topics

Specific Skills	Career Pathways
CV preparation	Picking a research problem
Publishing tips	Transitioning from academe to industry
Negotiation	Workplace challenges
Teaching strategies	Work-Life issues
Writing methods	The culture of physics
Funding opportunities	Careers in different countries

Varied Formats

Lecture, demonstration, panel,
Workshop, team assignments,
Theatre-based, posters, discussion





Diversity of Speakers

Physics sub-field,
Country of origin,
Career stage,
Gender,

...



Impact

based on survey and
post-workshop communications

- ❖ Sense of community
- ❖ An enduring network
- ❖ Inspiration to persevere
- ❖ New directly useful career skills
- ❖ Perspective on global context of women physicists
- ❖ Plans to share what was learned back at home institution
- ❖ Plans to organize a similar conference in home country
- ❖ Request for future workshops to benefit more women physicists



EXAMPLE II:

Supporting LGBT Physicists in the American Physical Society

lgbt+physicists.org

Open Source Template by Darjan Panic & Brian Green

700 nm

lgbt+physicists

Serving Sexual and Gender Minorities in Physics

About

Events

Projects

OutList

Physics Resources

Other LGBT+ Resources

Talks, Articles, and Media

Meeting Minutes

Blog

Contact

600 nm

Welcome to the first website for lesbian, gay, bisexual, transgender, intersex, queer, questioning, asexual, pansexual, not-cisgender and not-straight (as well as friendly cis and straight) physicists. This resource website has come out of a need for resources for gender and sexual minority (GSM) physicists. We serve as a networking resource for young GSM physicists and students to find mentors, a place to find resources for laboratories and universities to make their physics departments more GSM friendly, as well as a hosting of information of get togethers of GSM physicists and allies.

Along with the [AAS Working Group on LGBTIQ Equality](#), have recently updated our [Best Practices Guide](#) for physics and astronomy departments! It includes a list of suggestions that your department can enact to make it more inclusive and welcoming towards LGBT+ students and faculty.

If you would like to join our mailing list, please join the the Google Group below. If you are a physicist who is either an out GSM or ally, please consider [e-mailing us](#) so that we can add you our [OutList](#), which will help other physicists network with you. If you would like to offer your skills and talents towards this cause, please [contact us](#).

We look forward to meeting you and continuing to build this community!

Subscribe to **lgbt+physicists**

Email:

[Visit this group](#)

500 nm

E-mail us at info@lgbtphysicists.org

400 nm



Charge to APS Ad-Hoc Committee on LGBT Issues



“...advise the APS on the current status of LGBT issues in physics, provide recommendations for greater inclusion, and engage physicists in laying the foundation for a more inclusive physics community.”

*Kate Kirby,
Executive Officer of the APS*

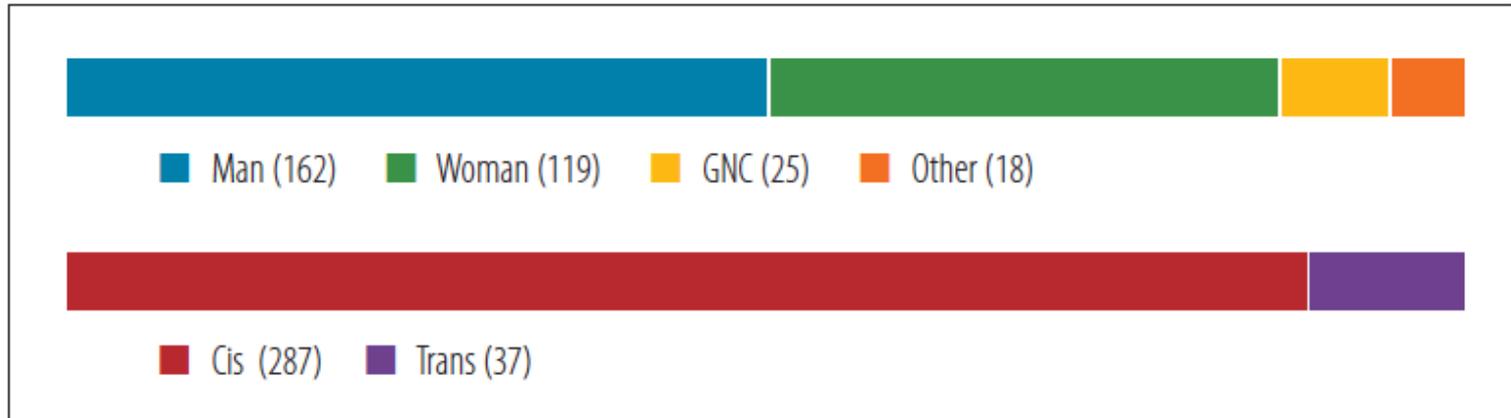
Information Gathering

Focus Groups at APS Meetings

2014 and 2015 at both March and April Meetings

Climate Survey of LGBT Physicists (May-June 2015)

Surveyed 324 individuals through snowball sampling.
Follow up interviews with 5 survey participants.



APS Membership Survey Question (October 2015)

2,596 responses of which 2.5% identified as LGBT and 14% preferred not to provide this information.

Notably, 16.3% of those 18-25 identified as LGBT.

LGBT Climate in Physics

BUILDING AN
INCLUSIVE
COMMUNITY



AMERICAN PHYSICAL SOCIETY

APS Ad-Hoc Committee on LGBT Issues

Michael Falk (chair)

Johns Hopkins University

Timothy Atherton

Tufts University

Ramón Barthelemy

APS/AIP Sponsored AAAS Science and
Technology Fellow

Wouter Deconinck

College of William and Mary

Savannah Garmon

Osaka Prefecture University

Elena Long

University of New Hampshire

Elizabeth Simmons

Michigan State University

Kyle Reeves

University of North Carolina

Monica Plisch

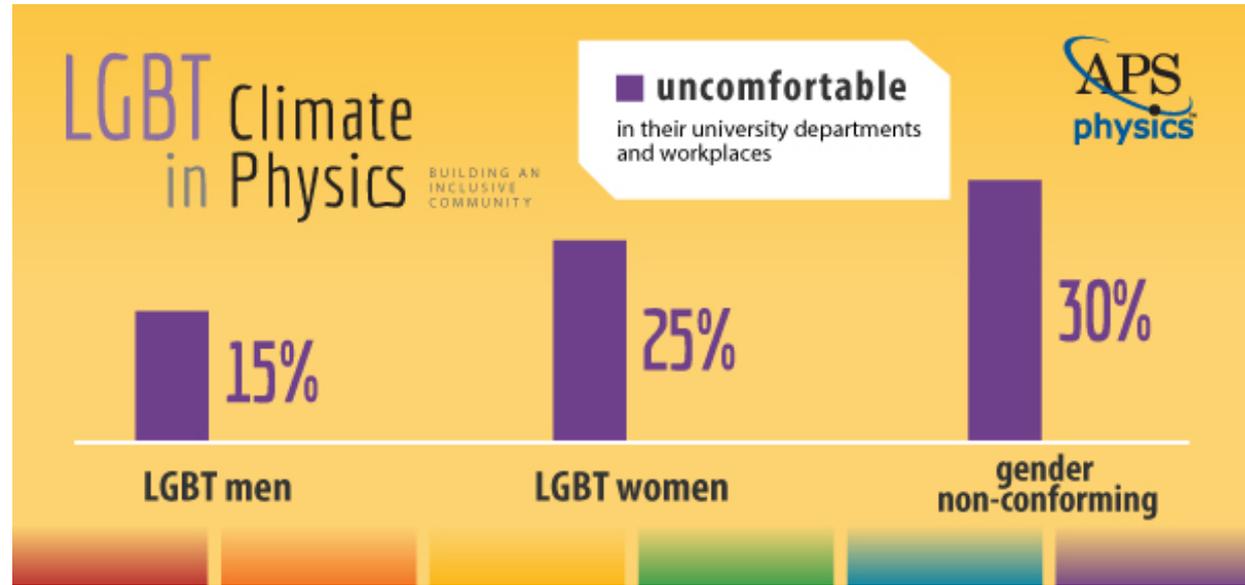
Arlene Modeste Knowles

APS Staff Liaisons

[Go.aps.org/lgbtphysics](https://go.aps.org/lgbtphysics)

Background and Findings 2

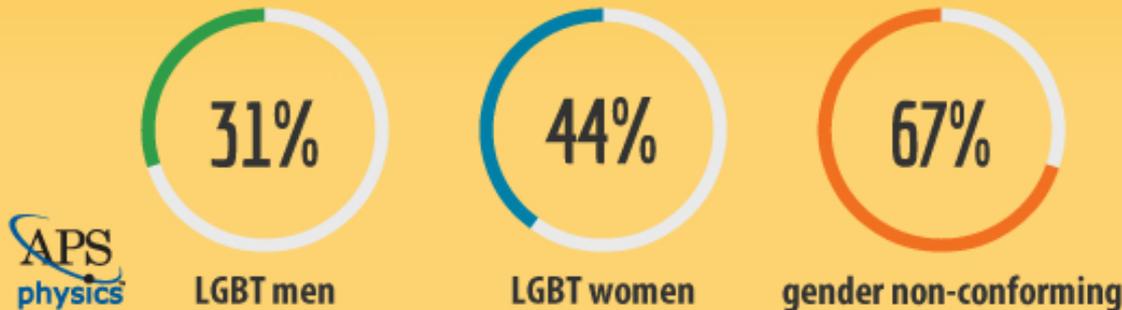
The overall climate experienced by LGBT physicists was highly variable.



LGBT Climate in Physics

BUILDING AN INCLUSIVE COMMUNITY

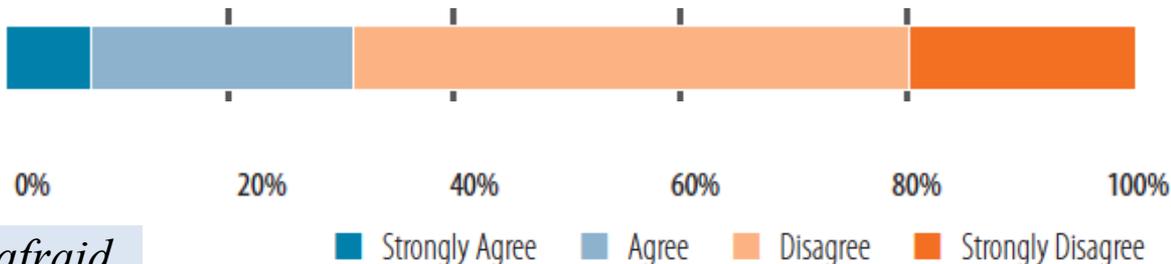
LGBT Physicists who have observed harassment in their departments and workplaces



Background and Findings 3

In many physics environments, social norms establish expectations of closeted behavior.

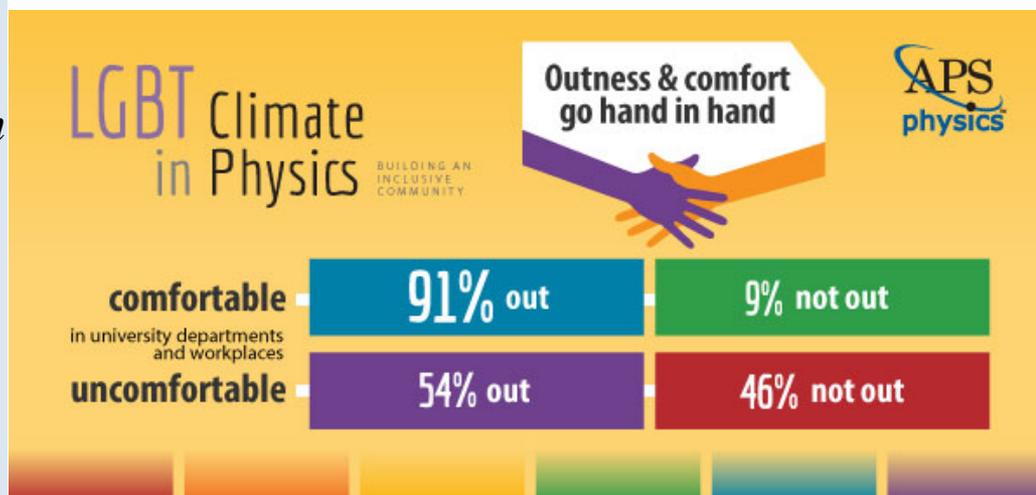
There is pressure for LGBT employees to stay closeted



“In the last lab I worked with, I was afraid to even mention that I might be gay. They were all very traditional sort of people.”

“Because I am in the closet about my identity, and I pass just fine as a result, I am actually quite comfortable in these areas. What people don’t know can’t hurt me!”

“I don’t know of any other ‘out’ physics grad students. I know that a lot of them are very conservative. And I feel like they respect me right now. But I don’t know that they would respect me if I came out to them.”



Background and Findings 8

Many LGBT physicists are at risk for leaving their workplace or school.

36%

Considered leaving their workplace or school in the prior year



“Just you not being able to figure me out doesn’t really need to qualify whether I can be educated here..”

“... And the outlook for me in terms of getting a Ph.D., which is what I’m kind of debating whether or not I want to do, is really contingent upon whether or not I have the right type of support system around me to be able to facilitate my success.”

Recommendation 6

Support the establishment of a Forum on Diversity and Inclusion.

APS should support the establishment of a new APS Forum that works to build a more inclusive, diverse and equitable society for all physicists, including those who identify as LGBT, women, racial or ethnic minorities, persons with disabilities and others.

APS Forum on Diversity and Inclusion

Physicists of
Color

Women Physicists

LGBT Physicists

Physicists with
disabilities

Update: A proposal and bylaws for the Forum are in the works!

**C
H &
A
RESOURCES
G
E**

How all Physicists can Promote Diversity & Inclusion

- Recognize these issues are worthy of discussion and effort within the physics community
- Seek and support physics talent, potential, and accomplishment in the broadest range of individuals
- Stand up for colleagues who work on these issues
- Consciously examine the most reliable evidence when making decisions, to minimize the impact of implicit biases
- Listen closely to the lived experiences of other physicists
- Join the efforts to establish an APS Forum on Diversity & Inclusion, to help us all recruit, train, and keep the best physicists in our field

How **all** Physicists can Promote Diversity & Inclusion **at DPF2017**

Today and tomorrow: participate in the parallel sessions on diversity, inclusion & education to find collaborators and discover useful strategies

“Innovations in Science Communication”

(10:45 – 12:15 today)

“Education in the Digital Age”

(13:30 – 15:15 today)

**“Equity, Inclusivity, and Diversity
in Science Culture”**

(13:30 – 15:15 tomorrow)

Resources:

AIP Statistical Research Center: www.aip.org/statistics/

American Physical Society

Gender Equity Report: www.aps.org/programs/women/workshops/gender-equity/

Best Practices: <http://www.aps.org/programs/women/reports/bestpractices/>

C-LGBT Report: go.aps.org/lgbtphysics

Faculty Family Friendly Edge: ucfamilyedge.berkeley.edu/

Gender Equity Project: www.hunter.cuny.edu/genderequity/

Implicit Associations Test <https://implicit.harvard.edu/implicit/demo>

lgbt+physicists

Website, with Out and Ally lists lgbtphysicists.org

Best Practices Guide: lgbtphysicists.org/files/BestPracticesGuide.pdf

NSF ADVANCE

Portal Website: www.portal.advance.vt.edu/

Michigan State's ADAPP-ADVANCE Project: www.adapp-advance.msu.edu/

StratEGIC Gender Equity Toolkit: www.colorado.edu/eer/research/strategic.html

WISELI Guide to Inclusive Hiring: <http://wiseli.engr.wisc.edu/searchguidebooks.php>

More Resources:

Books:

- L. Babcock and S. Laschever [negotiation], *Women Don't Ask and Ask For It*
- S.E. Page [diversity and teams] *The Difference*
- C. Steele [stereotype threat] *Whistling Vivaldi*
- J. Williams & R. Dempsey [patterns of bias] *What Works for Women at Work*
- E. Ideal & R. Meharchand, eds. [women role models in STEM] *Blazing the Trail*
- T. Wilson [conscious & unconscious mental processes] *Strangers to Ourselves*

Articles:

- Nature special issue: Vol. 495, 7 March 2013
- Inside Higher Ed, column: *Mend The Gap* [E.H. Simmons]
- Inside Higher Ed, column: *Mentoring 101* [Kerry Ann Rockquemore]

Organizations:

- National Center for Faculty Development & Diversity <http://www.facultydiversity.org>
- MentorNet <http://mentornet.org>
- National Society of Black Physicists <http://nsbp.org>
- National Society of Hispanic Physicists <http://www.hispanicphysicists.org>
- SACNAS <http://sacnas.org>