

SPECTRUM



A report on underrepresented minorities in astronomy

INSIDE THIS ISSUE

Recommendations Made to Address Cost of Graduate Record Exams

by Adam Burgasser, UC San Diego

At the January 2014 AAS meeting in Washington, DC, a session on “The Proper Use of GRE Scores for Enhancing Diversity and Excellence in Astronomy and Physics Graduate Programs” was held in front of a packed audience. The session featured presentations on how the Graduate Record Exam (GRE) and Physics Graduate Record Exam (PGRE) are correlated with gender, ethnicity and graduate outcomes; equity issues in using GRE cutoffs; and programs that go beyond the GRE in evaluating graduate candidate potential (see the presentations at <http://csma.aas.org/events.html>). However, a topic not discussed in detail during this session was the cost students incur in taking these exams.

According to ETS [1], roughly 60,000 physics majors take the GRE each year and 5,000 take the PGRE (this includes domestic and international students). Students currently pay \$195 to take the GRE and \$150 to take the PGRE, as well as \$27 for each institution/fellowship they designate to receive an official score beyond an initial four. Many students also take GRE prep courses, which can exceed \$1000. Considering that students often take these exams multiple times (particularly the

(Continued on page 3)

NSBP Meeting Makes a Return to Baltimore

by Kevin Covey, Western Washington University

Exciting results will be presented and new collaborations initiated in February when leading astronomers and astrophysicists converge on Baltimore for the **2015 Conference of the National Society of Black Physicists (NSBP)**. The 2015 NSBP Conference will take place February 26-28, 2015 at the Hilton Baltimore Hotel and will highlight recent results from all areas of physics, including the latest observational and theoretical studies of our universe.

A full slate of astrophysics sessions are planned for Thursday, featuring invited talks by Fabienne Bastien (Penn State Univ.), Louise Edwards (Yale Univ.), Meredith Hughes (Wesleyan Univ.), John Johnson (Harvard Univ.), Jorge Moreno (Cal State Poly) and Jessica Rosenberg (George Mason Univ.). Sessions presenting the latest work in Cosmology & General Relativity (CGR) and Earth & Planetary Science (EPSS) will be held on Friday, followed by a panel discussion Satur-

(Continued on page 3)

Recommendations Made to Address Cost of Graduate Record Exams
by Adam Burgasser 1

NSBP Meeting Makes a Return to Baltimore
by Kevin Covey 1

News You Can Use 2

Ain't I a woman? At the intersection of gender, race and sexuality
by Chanda Prescod-Weinstein. 5

Being an Ally: Recommendations from the North American Students of Cooperation 7

Meet the members of the CSMA Council 9

Inclusive Astronomy 2015 Planned for June
by Keivan Stassun 11

Cal-Bridge partnership aims to increase diversity in Astronomy
by Alexander Rudolph & Tammy Smecker-Hane 12

HBCU/TWI Partnerships: The UC-HBCU Initiative and the UCSD-Morehouse-Spelman Bridge Program
by Adam Burgasser 13

News You Can Use

If you would like to contribute stories to "News You Can Use", please send articles and ideas to the Editor Adam Burgasser, aburgasser@ucsd.edu

TWO ASTRONOMERS OF COLOR SELECTED AS 2015 TED FELLOWS

Dr. Jedidah Isler and Dr. Aomawa Shields were two of 21 scientists, artists, writers, activists and entrepreneurs selected in the Technology Education Design (TED) Fellowship Program for 2015. Jedidah, a member of the CSMA Council, is a Chancellor's Faculty Fellow at Syracuse University and astrophysicist investigating blazars. Aomawa studies the climate and habitability of planets around low-mass stars, and as a classically trained actor engages young girls in astronomy using theater and writing. Congratulations Jedidah and Aomawa!

CSMA CO-SPONSORS WORKSHOP ON IMPOSTER SYNDROME

The CSMA is cosponsoring a special session entitled "Identifying and Overcoming the Impostor Syndrome". This session is on Wednesday, January 7 from 5:30pm-6:30pm in Room 616/617. "Impostor Syndrome" (IS) was coined by Pauline Clance and Suzanne Imes in 1978 to describe the debilitating thoughts of self-doubt that erode confidence and can lead to depression, stagnation, and even leaving the field. Studies have shown that IS is more frequently experienced by women and underrepresented minorities, and may be an underlying driver of underrepresentation in science. The workshop will be led by Dr. Jessica Kirkpatrick.

SAVE THE DATE: INCLUSIVE ASTRONOMY MEETING JUNE 17-19, 2015

We encourage our community to participate in the inaugural Inclusive Astronomy meeting, planned for June 17-19, 2015 at Vanderbilt University, Nashville, TN. The goal of the meeting is to define recommendations and actions that will make the astronomical community more diverse and inclusive, particularly of intersectional groups. The organizing committee includes members of the CSMA, CSWA and WGLE. See page 11 for more information.

HOW CAN THE CSMA HELP YOU?

The CSMA wants to hear from the AAS community what issues they are facing, what resources they need, and how the CSMA can help. Please consider taking the following survey:

<http://bit.ly/1fNW19J>

Your suggestions will help shape the initiatives of the CSMA!

REQUEST FOR RESEARCH, TEACHING, OR OUTREACH HIGHLIGHTS

SPECTRUM would like to feature the outstanding research, teaching, and/or outreach efforts of diverse astronomers. Please send any highlights to the Editor Adam Burgasser (aburgasser@ucsd.edu) and we will feature them in the next newsletter.

SPECTRUM

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Submission of articles to SPECTRUM is welcome! Contributions and ideas can be e-mailed the Editor at aburgasser@ucsd.edu

For more information, please visit us on the web:
<http://csma.aas.org>

NSBP... (cont'd)



Presenters and attendees at the ASTRO Session during the 2009 Joint NSBP-NSHP Meeting in Nashville, TN

day morning on career paths in astronomy and astrophysics. The Astronomy and Astrophysics section (ASTRO) will also host several informal networking events, and will coordinate the Dr. Beth Brown Memorial Prizes, awarded to the best student presentations at each NSBP meeting.

The NSBP conference represents a premier opportunity to meet, network with, recruit and mentor some of the best young scientists in the world. NSBP provides direct financial support to cover the costs associated with attending the conference, such as travel, lodging, and food, for several hundred student attendees. The high level of student participation at the NSBP meeting makes it a great venue to meet, support, and recruit young scientists for summer research and graduate programs.

If you would like to attend the meeting as an exhibitor or recruiter for your institution, see the URL <http://www.nsbp.org/conference/exhibitors>. For more information on student support, which is awarded on a first-come, first-served basis, see <http://tinyurl.com/pu2uvhv>.

Space (no pun intended) has been reserved for contributed talks in each of the astronomy & astrophysics sessions. Register now at <http://tinyurl.com/pd97nbe>; abstract submission deadlines had not been finalized at press time, but information concerning the abstract submission process will be made available at <http://tinyurl.com/p2lrc69> as soon as possible.

GRE Costs... (cont'd)

PGRE) and apply to 5-10 graduate programs, the GRE/PGRE requirement represents a \$300-\$1700 investment. This is beyond the means of many students, and with debatable benefit as a predictor for graduate program success. While ETS has a Fee Reduction Program that covers 50% of exam costs, this applies to a single test and the program has exceptionally stringent eligibility requirements.

There are compelling reasons to consider eliminating GRE/PGRE requirements for graduate programs and fellowships (following the leader-

ship of the NSF). Meanwhile, the cost burden, and the associated barriers to graduate admissions for students without the necessary financial resources, can be addressed immediately.

Members of the CSMA and CSWA and community advocates have compiled the following recommendations for Physics and Astronomy graduate programs nationwide, to administrators of standardized tests, and to funding agencies, to make graduate admissions more equal-opportunity across gender, ethnicity, and socioeconomic backgrounds.

(Continued on page 4)

GRE Costs... (cont'd)

Recommendations:

(1) Encourage graduate programs to accept unofficial scores prior to admission. Official score reporting can represent up to 50% of the total exam cost for graduate applicants, who see no return on this investment if they are not admitted. Allowing students to “self report” scores upon application, and requiring official scores only upon acceptance, can potentially save students hundreds of dollars at no cost to the graduate programs.

(2) Encourage graduate programs that require GRE scores to provide funding support for applicants. Since graduate programs are the ultimate consumer of GRE/PGRE scores, they have the greatest responsibility for (and will benefit most from) removing socioeconomic barriers for applicants. Since it would be prohibitive to provide funds for all applicants, programs may consider a “return on investment” for those students who matriculate into the program, a policy that could double as a recruitment strategy. Alternately, graduate programs requiring the GRE/PGRE for admissions and professional societies could be encouraged (by advertising their involvement) to pay into a national scholarship fund, perhaps centrally administered by the APS and/or AAS, for students who demonstrate financial need.

(3) Ask funding agencies to allow funds to be used for GRE/PGRE exam costs. Many REU, summer research and bridge programs provide GRE test training as part of graduate preparation training, but few do (or are permitted to) provide funds to students to pay for the exam itself. We should encourage funding agencies to (a) allow exam scholarships be included in program budgets, (b) provide supplemental grants for programs currently underway, and/or (c) establish a new fund specifically aimed at supporting GRE exam costs for students with proven financial need.

(4) Encourage and support regional PGRE preparation courses. GRE preparation courses often cost over five times the test itself, and students lacking financial resources to pay for these courses are at an immediate disadvantage. PGRE preparation workshops and bootcamps, run at some universities and regionally by organizations such as the California Professoriate for the Advancement of Physics Careers (CPAPC, [2]), provide students free training in test-taking strategies while giving graduate programs a forum for recruitment. Such programs are cost effective (\$50/student) and could

be supported through a combination of grants and contributions from graduate programs interested in recruitment.

(5) Demand ETS relax requirements for Fee Reduction, and increase support. The current Fee Reduction Program is limited to college seniors and unenrolled graduates at US undergraduate institutions who must also receive substantial financial aid (up to 95% of tuition). Few schools, particularly MSIs, have such aid programs. Since the population of physics and astronomy students taking the GRE/PGRE is dwarfed by other exam groups, it can be argued that expanded support does not significantly affect ETS's bottom line.

(6) Encourage national fellowships to remove GRE requirements as selection criteria. While the NSF Graduate Research Fellowship Program has removed GRE requirements, many other fellowships maintain mandatory or voluntary reporting. Since fellowships are most useful to students with financial need, the requirement of an expensive exam whose predictive power for graduate success is poorly established does not make sense, so these requirements should be dropped.

We reiterate that all stakeholders, including graduate programs, funding agencies, and professional societies, should reexamine the role of standardized tests in graduate admissions, and consider the use of alternate metrics proven to be effective, fair, and less financially burdensome [3,4]. In the meantime, we urge the above recommendations as a first immediate step to reduce the financial burden on students.

References

- [1] ETS: A Snapshot of the Individuals Who Took the GRE Revised General Test, <http://www.ets.org/s/gre/pdf/snapshot.pdf>
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- [3] Miller, C. & Stassun, K.G. (2014). A test that fails: A standard test for admission to graduate school misses potential winners, *Nature Careers* 510, 303
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Ain't I a Woman? At the Intersection of Gender, Race and Sexuality

by **Chanda Prescod-Weinstein** (*Massachusetts Institute of Technology*)

This article originally appeared on the Women in Astronomy blog, May 2014, and is reproduced here with permission (<http://womeninastronomy.blogspot.com/2014/05/aint-i-woman-at-intersection-of-gender.html>).

In 1851, former slave Sojourner Truth asked white feminists, "Ain't I a woman?" when they refused to let her speak at a women's conference because she was Black. One might hope that in 158 years, that speech wouldn't seem so essential and relevant. But at the 2009 Women in Astronomy conference, my first foray into non-race oriented equal opportunity efforts, we were told the news was good: women had made significant gains and equality was on its way. There was no substantive mention of race beyond Peggy McIntosh's talk. But I knew the truth. I have been looking at the NSF and AIP statistics myself for years, and I knew that the news was not good for Black, Latina, and Native American women. Those numbers hadn't changed too significantly in three decades. How could they possibly be telling us that the news was good?



Sojourner Truth

As a queer Black (cis)woman, I live at the intersection of multiple minority statuses. More of my time than I would like has been sucked up in trying to fend off the marginalization that society's structures foist upon anyone who has even one of these identities. More of my time than I would like has been spent thinking about a way out of those structures and trying to convince others to help.

And here's one thing I want out of: the phrase "women and minorities," a phrase I used to use a lot myself. As part of the effort to push for equal opportunities in STEM, I used it repeatedly for over a decade, thinking that I was advocating not just for strangers but also for myself. At some point however, hearing other people use it began to grate on me. A lot.

That underrepresented minority (URM) women aren't doing well in STEM signals just how well other women are doing: they are gaining ground that should be ours too. So, it's clear that the phrase "women and minorities" is failing us. It's clear that the "and" in that phrase is functionally an "or." And in that "or," people like me, our individual experiences, and the statistics most relevant to them are rendered invisible. What those 2009 celebratory pronouncements should have said was, "The news is good for white women." Implicit to how they were stated was the suggestion that all the women are white.

But I was there. And I am still here, and I still find that my most challenging experiences with discrimination are an awful non-linear combination of how people respond to my gender presentation, to my racial/ethnic presentation, and the assumptions people make about the socioeconomic class I grew up in (or rather people thinking it's okay to say bad things about people who share that socioeconomic class). To separate those things out is akin to suggesting that an inseparable differential equation can be magically transformed into a separable one. It's complete nonsense, and it has no place amongst scientists.

When I've mentioned this to friends and colleagues, people have asked what I think we should say instead. Some have suggested that we try to come up with a single umbrella term that captures everyone in one shot, such as "underprivileged" or "marginalized groups." I understand the impulse, but I think it's important to use explicit statements rather than vague ones, not unlike what is expected of us in publications about our research. We must

(Continued on page 6)

Ain't I a woman?(cont'd)

(Continued from page 5)

clearly acknowledge what we are talking about instead of tidily sweeping it under an easy-to-digest word or two.

These phrases give me pause for additional reasons too. Other queer cispeople of color have written elsewhere that it is the racism, not the homophobia, that often scares us the most. I am in general hesitant about a conversation and vocabulary that doesn't explicitly hone in on racism with the intention of taking white supremacist structures to task. I say this not because I am opposed to discussions about, for example, ableism, but because I believe that in order to combat -isms, we have to talk about each and every one of them explicitly.

Thus, I think it's important, when talking about race, "privilege" and equal opportunity, to say things like "people of color and white women." Or "underrepresented minority women and men and white women." I think that last phrase has a particular utility because different peoples of color face different challenges of representation, and that phrase is of the right specificity for most conversations around race and equal opportunity in STEM. (Although not all: there's been some research around the discrimination that Asian American women face, and "Asian American" includes several underrepresented groups, which people often fail to recognize. Moreover, Native Americans often identify as citizens of nations whose land the US settled on, not members of a race.)

It's also important to name the opportunities that white women do have relative to the rest of us, given that almost all women's gains in our fields are amongst white women. I've seen some white women in astronomy throw their weight around to close down discussions of race because they thought gender was more important. The capacity to successfully do that is a statement of power relative to underrepresented minority women. It is an abuse of power, and it is important to recognize that even though white women experience marginalization, they are still more empowered to participate in it than genderqueers, women, and men of color. Using the phrase "white women" explicitly draws attention to that complexity. White women



and underrepresented minority women are not the same demographic, and it is important to appreciate, note and very seriously commit to doing something about that.

One reason I reject "underprivileged" is because what we are talking about are not privileges, they are rights. I have a right to be treated like the equal of my straight and/or white and/or male colleagues. That I am sometimes not treated that way means that I am being denied rights - equal opportunities - not privileges. When a professor asks all of the white presenting postdocs what they are working on, only asks me whether my name means I'm Indian and then tells me about the Indian student they had one time, I am not missing out on the privilege of being treated equally, I am being denied my right to be treated equally. I think that as much as the word "privilege" has served this discussion well - and I think Peggy McIntosh is *super* fabulous - I think we need to let go of it and start framing the discussion as one about rights and equal opportunities because that is what we are talking about.

I realize an immediate objection some may have is that people are looking for a convenient phrase that doesn't feel unwieldy. But there is absolutely nothing convenient about the need to have these phrases, about still feeling 163 years after Sojourner Truth's speech that her words are relevant to the daily experience of many. If dealing with an unwieldy phrase is already too scary, I think we're in a lot of trouble.

(Continued on page 7)

Ain't I a woman?(cont'd)

(Continued)

After all, we are the human race, the ones who (maybe) recently found footprints of the first 10^{-34} seconds of the universe's existence in data gathered in the harshest cold conditions our planet has to offer. I think we can handle a few extra words. It is such an easy thing in comparison to the enormous task of shielding traditionally underrepresented people in STEM from the white supremacist, patriarchal, hetero- and cissexist structures that it has inherited from wider society. The reasons to do this are manifold, but the most important one is this: LGBTQ people of all colors and people of color and white women of all sexual orientations are the equals of straight white (cis)men, and it's time to rebuild (scientific) society so that equality is structurally foundational to it.

This won't really happen under the moniker of "diversity by including women and minorities" though. As Jelani Cobb wrote recently in *The New Yorker*: "To speak of diversity, in light of this country's history of racial recidivism, is to focus on bringing ethnic variety to largely white institutions, rather than dismantling the structures that made them so white to begin with." That includes recognizing that not all the women are white, nor are all the Blacks (for example) men. Other, more popular reasons to dismantle these structures, which include building a better talent pool for a stronger, more capable scientific community - as well as experiencing the wonders of diversity - are side effects of equality, not solutions to inequality. So, let's keep our eyes on the prize: equality for everyone.

Being an Ally: Recommendations from the North American Students of Cooperation

This article is reproduced with permission from the North American Students of Cooperation (NASCO) guidebook on anti-oppression, allies, power and privilege. For more information, visit <http://www.nasco.coop>

An ally is a member of the "majority" group who works to end oppression in his or her personal life though support of and as an advocate for the oppressed population. The following quotes about what it means to be an ally were taken from discussions conducted by Student Allies for Equality at Western Washington University:

"An ally validates and supports people who are different from themselves."

"An ally realizes and questions personal privilege and uses it to benefit people who are oppressed."

"An ally examines their own prejudices and is not afraid to look at themselves."

"An ally supports the oppressed groups voice and sense of autonomy."

"An ally works with the oppressed group, offering support by being accountable to, but not being responsible for, the oppressed group."

"An ally is an advocate by challenging

(mis)conceptions when the oppressed group is absent."

"Being an ally means: sharing the power, taking a risk, taking responsibility, opening yourself up to the unknown, realizing that you are a part of the solution, leveling the playing field, accepting differences, making allowances, and leading by action."

Becoming an ally is a process. Take time to think about the process outlined below and about where you are and where you would like to be.

Step One: Be Aware

Who are you? Understanding your viewpoint and its origins in maleness or femaleness, religion, ethnicity, race, physical and emotional abilities, class, etc., is critical to understanding your relationship to others, to ideas, and to events.

Step Two: Educate Yourself

Learning about others is the next important step in becoming an ally. Challenge yourself to learn about

(Continued on page 8)

Being an Ally... (cont'd)

(Continued from page 7)

persons, cultures, and groups that you do not identify with. It is only by learning about others that you can stand with and for them in the face of oppression. The knowledge you gain will enable you to be accountable to the persons for whom you are an ally.

Step Three: Gain the Skills

In order to be an effective ally, you need to develop skills to communicate the knowledge you have gained about yourself and others. This may seem frightening at first, since it involves taking steps towards action. Research venues where you can practice the skills needed to become an ally in a safe, non-judgmental environment.

Step Four: Take Action

It is only by participation that we become involved in the struggle to end oppression in our communities. Yes, it is challenging. Yes, it can be frightening. However, if we keep our knowledge, thoughts, skills, and awareness to ourselves, we deprive others not only of our own gifts, but of a life of richness and equality. Share your knowledge.

Being an Ally: Action Ideas and Tips

1. I know when to step back. I make space for the oppressed person/people to speak out, share, lead, and validate one another.
2. I acknowledge that persons from under-represented groups need to take the lead in fighting the oppression that they face. I take direction from and defer to them about how to proceed.
3. I do not expect members of under-represented groups to explain to or educate me.
4. I do not attempt to convince individuals in a marginalized group that I'm on their side. I show support through continuous action. I approach the work I do as support work. I realize it is not my job to call the shots, but to support their struggles as an ally.

5. I remember that members of under-represented groups are survivors (not victims) and have a long history of resistance. I celebrate instances of resistance. I learn and talk about forms of resistance and instances of successful struggle, not just instances of oppression.

6. I speak up when I hear people implying that under-represented groups are powerless or deserving of pity. I remind them that being oppressed does not mean being powerless.

7. I talk to other members of my privileged group about privilege and oppression. I make these conversations part of my daily life.

8. I am able to acknowledge how oppressive patterns operate in practice.

9. I listen to a person from an under-represented group express their concerns and perspectives about community issues and encourage them to take action. I also ask what they want to do and how I can help make that happen.

10. I assume that people in under-represented groups are already communicating in the best and most comfortable way they can.

11. I make the concerns of under-represented groups visible by helping people get in the door.

12. I connect with other allies.

13. I am friends with people from groups with whom I do not personally identify.

14. I treat people as individuals. I don't make one person represent all of an under-represented group.

15. I do not expect gratitude from people in an under-represented group. I remember that being an ally is a matter of choice.

16. I create a comfortable setting. I am conscious of wardrobe, mannerisms, and things used to decorate my living and work environments.

17. I know that an under-represented group may question my motive for being an ally. I know that this doubt is valid.

To read more about being an ally, visit the NASCO site at <https://www.nasco.coop>. A handout for colleagues on tips on being a good ally can be downloaded from <https://www.nasco.coop/resources/being-an-ally>



Meet the Members of the CSMA Council

This year, three CSMA Council members have concluded their service. We thank **Laura Lopez**, who served on the CSMA for 6 years and was editor of the SPECTRUM for an amazing 8 years; and **Kevin Covey** and **Andrew West**, both of whom have served for 5 years. We thank them for their tremendous contributions over the years! This year we welcome one newest council member, **Alyson Brooks**, an Assistant Professor of Physics & Astronomy at Rutgers University.



Joseph Barranco (2012-2015) earned his BA in Physics, Astronomy & Astrophysics from Harvard University, and his PhD in Astrophysics from the University of California, Berkeley. His thesis won the APS Nicholas Metropolis Prize for Outstanding Doctoral Thesis in Computational Physics. After earning his BA, Joe was assistant director of the after-school tutoring program Project 21 and the summer day camp Camp Ozioma, and a mentor in the gang-intervention program Gangs Anonymous. While in graduate school, he taught math and science to socioeconomically disadvantaged high school students in the Berkeley Upward Bound program, mentored Oakland youth in the Stiles Hall Black & Latino Violence Prevention Project, and taught math and astronomy to men in San Quentin Prison. Following an NSF Postdoctoral Fellowship at UC Santa Barbara and Harvard-Smithsonian Center for Astrophysics, Joe joined the Department of Physics & Astronomy at San Francisco State University, where he is now an Associate Professor. In addition to being a member of the CSMA, he serves on the APS Committee on Minorities.



Alyson Brooks (2014-2017) is an Assistant Professor at Rutgers. She is an observationally-oriented theorist who uses high resolution, fully cosmological simulations to interpret observations on galaxy formation. She focuses on the role of gas and stellar feedback in shaping the dark matter content of galaxies. Alyson's passion to increase inclusion and diversity in astronomy surfaced in graduate school at the University of Washington. While there, she served as a graduate advisor in the Office of Minority Affairs & Diversity, mentoring underrepresented undergraduates in research and graduate school preparation. She also helped support the Astronomy Department's fledgling Pre-Major in Astronomy Program (Pre-MAP). At Rutgers, Alyson works with several programs designed to support underrepresented students in science, including the Price Foundation Fellows Program (supporting Rutgers undergrads with current or former experience in the child welfare system) and Project SUPER (Science for Undergraduates: A Program for Excellence in Research, aimed at women in STEM). She also regularly mentors students through the Rutgers NSF REU and other summer research programs.



Adam Burgasser (2013-2016) is an Associate Professor of Physics at UC San Diego, and an observational astronomer who investigates the lowest-mass stars, brown dwarfs and extrasolar planets. He is also interested in multidisciplinary learning that merges arts, movement and science education. Adam joined the CSMA with a commitment to remove barriers to inclusion in the physical sciences, and remove overt and unconscious bias in minority student experiences. Inspired by the 2009 National Society of Black Physicists meeting, and racial tensions that emerged the following year at UCSD, he has worked to raise awareness of bias and discrimination, and increase opportunities for all underrepresented groups. Adam co-leads the UCSD-Morehouse-Spelman UC-HBCU Physics Bridge Program and mentors the UCSD Undergraduate Women in Physics group.



Kim Coble (2013-2016) is an Associate Professor of Physics at Chicago State University, a minority-serving institution on Chicago's South Side. Her research interests include student understanding of cosmology, use of data and telescopes in general education courses, and identifying the strengths of the urban, minority learner. She is using the results from this research to build effective, interactive curricula. Raised in a diverse community, Kim has always been passionate about making science accessible and satisfying for all people. While attending a conference as a postdoc and realizing there were no visible minorities and few women out of over a hundred attendees, she was spurred to action. She has worked with minority communities to educate herself and others about underrepresentation, racial bias, structural inequality, and the strengths a diverse workforce brings to our field. Kim also serves on the AAS Astronomy Education Board and AAPT's Committee on Diversity. She supports and mentors both faculty and students as Chicago State's campus director for the Illinois Space Grant Consortium.



Jacqueline Faherty (2013-2016) received her PhD in Physics from Stony Brook University in 2010 and is currently a Hubble Fellow at the Carnegie Institution of Washington, spearheading comparative brown dwarf/exoplanet studies. Prior to graduate school she managed Astrophysics outreach programs at the American Museum of Natural History that targeted poor performing schools in New York City. As an NSF Postdoctoral fellow in Santiago, Chile from 2011-2013, she organized a worldwide viewing of the transit of Venus that involved youth from underdeveloped parts of the world. She is also co-founder of the 501c non-profit foundation entitled Raising Awareness In Science Education for Women (RAISE-W) that aims to encourage young females to enter STEM fields. As the first PhD from a half Puerto Rican family, she is dedicated to seeing more diversity in Astronomy and excited to make a difference in that respect as a member of the CSMA.



Jedidah C. Isler (2012-2015) is a Chancellor's Faculty Fellow in Syracuse University's Physics Department. She earned her Bachelor's at Fisk University, her Masters at Norfolk State University, and her PhD in Astronomy at Yale University with her dissertation, "In Like a Lamb, Out Like a Lion: Probing the Disk-Jet Connection in Fermi Gamma-ray Bright Blazars." She is extremely interested in understanding the physical mechanisms responsible for relativistic jet emission in blazars and is equally committed to issues of diversity, access and engagement in Astronomy and in STEM (Science, Technology, Engineering and Mathematics) more broadly. She serves on the CSMA Council and on the board of trustees for the Museum of Science and Technology in Syracuse, where her goal is to make tangible inroads in both the extension of opportunity to traditionally underserved populations and the sharing of her love of astrophysics. When she isn't working on that, she is logging hours for her pilot's license, hiking, or laying on (or dreaming about) various beaches around the world. Jedidah was recently named a 2015 TED Fellow.



Thompson (Tommy) Le Blanc (2013-2016) is a Research and Instrument Analyst at the Space Telescope Science Institute, currently assigned to the Near Infrared Spectrograph (NIRSpec) of the James Webb Space Telescope (JWST). He is very interested in contributing to astronomy in a support role, with interests in young stars and the instruments used to study them. Tommy joined the CSMA to increase the participation of minority students in the STEM fields, in particular where astronomy is concerned. As a first generation scientist, he would like share his experiences in an effort to increase awareness of the issues that may make success in the STEM fields difficult.

First Inclusive Astronomy Conference Planned for June 2015 in Nashville, TN

by *Keivan Stassun (Vanderbilt University)*

Organizers from the American Astronomical Society's (AAS) Committee on the Status of Minorities in Astronomy (CSMA), Committee on the Status of Women in Astronomy (CSWA), and the Working Group on LGBTIQ Equality (WGLE) and the community, are pleased to announce and invite the participation of all to **Inclusive Astronomy 2015**, a meeting to be held June 17-19, 2015 at Vanderbilt University in Nashville, Tennessee. Inclusive Astronomy 2015 will serve as a venue to advocate and provide resources for the inclusion in the astronomy community of: people of color; lesbian, gay, bisexual, transgender, intersex, queer, or questioning (LGBTIQ) people; people with disabilities; women; and everyone who holds more than one of these underrepresented identities.

Previous successful conferences on diversity and inclusion in astronomy have primarily focused on the need for better representation of women. A key focus of Inclusive Astronomy 2015 will be on intersectionality: the well-established conceptualization that racism, sexism, heterosexism, transphobia, and ableism are linked (e.g., that women of color are faced with the intersection of racism and sexism; see article by Chanda Prescod-Weinstein on page 5). More generally, this meeting will focus strongly on diversity, equity, and inclusion of people of color, LGBTIQ people, women, and disabled people.

The conference is being structured around four broad topical areas: barriers to access; creating inclusive climates; inclusion and access to leadership, power, and decision making; and establishing a

community of inclusive practice. Each of these topical areas will address the inclusion of all of the communities mentioned above by creating opportunities for understanding, along with strategies and tools for improvement. The meeting will include a diverse set of speakers, including sociologists and other subject matter experts who have specialized knowledge of the four broad areas and their connection to intersectional persons.

An aim of this conference is to disseminate research on diversity, equity, and inclusion to the astronomical community. Attendees will share and be provided with tools and strategies to take back to their home institutions. This conference will also result in a set of inclusive astronomy recommendations as a roadmap for administrators, faculty, researchers, and students to improve the participation of all in astronomy.

INCLUSIVE ASTRONOMY 2015
June 17-19, 2015
Vanderbilt University, Nashville, Tennessee

Help define recommendations and actions that will make the astronomical community more diverse and inclusive.

Web: vu.edu/ia2015
Email: inclusiveastronomy2015@vanderbilt.edu

Plenary talks, breakouts, workshops, panel discussions, and collective brainstorming on:

- Diversity, Inclusion, and Intersectionality
- Barriers to Access
- Creating Inclusive Environments
- Policy, Power, and Leadership
- Building a Community of Inclusive Practice

the GUITAR NEBULA - Palomar Observatory and Space Telescope Science Institute (Hubble Space Telescope)

AAS AURA FISK-VANDERBILT Master's-to-Ph.D. BRIDGE PROGRAM

Anticipated sponsors include the AAS, the National Science Foundation, and the Association of Universities for Research in Astronomy (AURA). We expect to be able to support travel costs for a number of early-career attendees.

Registration for the meeting will open on February 1, 2015, at the meeting website: <https://vanderbilt.irisregistration.com/Home/Site?code=InclusiveAstronomy2015>

Cal-Bridge Partnership Aims to Increase Diversity in Astronomy

by Alexander L. Rudolph (Cal Poly Pomona) and Tammy Smecker-Hane (UC Irvine)

Southern California students who excel in astronomy and physics but are traditionally underrepresented in those fields are getting a big boost toward earning doctorates at University of California research campuses, thanks to a new mentoring and scholarship program named Cal-Bridge (<http://www.cpp.edu/calbridge>). Five students from Southern California California State University (CSU) campuses have been selected as the first class of Cal-Bridge Scholars.

Cal-Bridge is a consortium of eight CSU schools, five UC campuses and eight community colleges working to increase the number of underrepresented, often lower-income students who complete Ph.D. degrees in astronomy and closely related fields. Hispanics and women are among the targeted populations.

The National Science Foundation has awarded the group \$600,000 for financial support and intensive joint mentoring of Cal-Bridge Scholars by community college, CSU and UC faculty during the last two years of their undergraduate education and first year of graduate school.

The selected students consist of four women and one man, of which three are Hispanic, one is part Native American and one is White. The students attend Cal Poly Pomona, CSU San Bernardino, CSU Long Beach and San Diego State University.

Cal-Bridge began when Alex Rudolph, professor at Cal Poly Pomona, and director of the astronomy summer research program CAMPARE (<http://www.cpp.edu/campare>), approached his friend and colleague Tammy Smecker-Hane of UC Irvine, to ask her to help him recruit faculty for the program. Cal-Bridge is modeled after the highly successful Fisk-Vanderbilt Master's-to-PhD Bridge program [1,2,3]. Together, Alex and Tammy recruited over

25 astronomy and physics faculty from the 20 universities and colleges in the Cal-Bridge consortium.

In 2013, Cal-Bridge invited Keivan Stassun, founder and director of Fisk-Vanderbilt, to the planning meeting to design the program. Following his recommendations, the team decided to focus recruitment using research-validated selection methods to identify “diamonds-in-the-rough”: students from underrepresented groups who display both academic potential and strong non-cognitive abilities, (i.e., “grit”) and provide both financial and mentoring support in gaining admission to a PhD program at one of the 5 southern California UC campuses in the Cal-Bridge network. There has

been great interest in non-cognitive measures as predictors of success in graduate programs, since research has shown that the traditional metrics used in graduate admissions, such as GRE scores, are not well-correlated with such success [4,5]. The main difference from Fisk-Vanderbilt is the decision to recruit the students while they are still

undergraduates, typically after their sophomore year. Almost half of all underrepresented students interested in STEM fields fail to advance in their major [6], suggesting that early intervention is key to helping underrepresented students persist in STEM degrees.

Key elements of Cal-Bridge include:

- Scholar selection from the CSUs and community colleges using a wide range of research-based metrics (leadership, communication skills, research experience, grit,...)
- Three years of full scholarship funding for the last two years of undergraduate and first year of graduate tuition and fees
- Assignment of two mentors: one from a



The 2014 Inaugural group of Cal-Bridge scholars

(Continued on page 12)

Cal-Bridge... (cont'd)

(Continued from page 11)

participating UC campus, one from the scholar's home CSU campus

- Extensive mentoring in academics and professional development to assist the scholars in completing their bachelor's degrees and applying for graduate school
- Summer and academic year research opportunities at the participating UC campuses
- Financial support and encouragement for Scholars to present results at regional and national conferences

In the National Academy of Sciences 2010 Decadal Survey of Astronomy, "New Worlds, New Horizons in Astronomy and Astrophysics," the authors noted that, while Blacks, Hispanics, and Native Americans constitute 27 percent of the U.S. population, they account for less than 4 percent of physics and astronomy PhDs awarded in the United States and only 3 percent of faculty members. Women are similarly underrepresented in PhDs earned (20% in physics, 40% in astronomy) and faculty positions held (14% in physics, 17% in astronomy). One of the top strategies recommended to overcome this underrepresentation is "Partnerships of community colleges and minority-serving institutions with research universities and with national centers and laboratories." Cal-Bridge is such a program. The President's Council of Advisors on Science and Technology (PCAST), in their February 2012 report state, "Federal agencies should encourage projects that establish collaborations between research universities and community col-

leges or other institutions that do not have research programs," suggesting that programs like Cal-Bridge (and CAMPARE) are a national priority in STEM education.

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HBCU/TWI Partnerships: The UC-HBCU Initiative and the UCSD-Morehouse-Spelman Bridge Program

by Adam Burgasser (UC San Diego)

As the fractions of Bachelor's and PhDs awarded to African Americans in Physics and Astronomy continue to decline [1,2], several new programs have emerged to facilitate the transition of black students between Historically Black Colleges and Universities (HBCUs) and Traditionally White Institutions (TWIs). Such transitions are motivated by the observation that HBCUs produce a large fraction of African American Bach-

elor's degrees in the physical sciences (37%, [3]), while the majority of Physics PhDs are located at TWIs. Identifying effective ways of supporting students in this transition is the primary work of the various Bridge programs that have developed over the past several years, such as the Fisk-Vanderbilt and CSU-UC Cal-Bridge programs (page 11).

The UC-HBCU Initiative

The ten campuses of the University of California

(Continued on page 13)

HBCU/TWI Partnerships... (cont'd)

produce over 4000 PhDs each year, of which over 500 are in the physical sciences [4]. However, the UC graduate population is highly unrepresentative of both California and US demographics. African Americans comprised only 2.7% of doctoral candidates in all programs between 2009-2013 [4]; the fraction of African American PhDs in the physical sciences is lower still. To address this shortcoming – without running afoul of California's anti-Affirmative Action law Proposition 209 – The UC Office of the President created the UC-HBCU Initiative [5] in 2011 with a primary goal of increasing the number of HBCU students enrolling in UC doctoral programs. The Initiative is competitive grant program providing funding for two types of awards. The *Summer Research Internship Support Grant* supports one or more HBCU students for a single summer of research at a UC campus, and can be used multiple years to support the same student until completion of an undergraduate degree. The *Summer Research and Graduate Admission Pathways Grant* provides support of several summer research students over a three-year period. These larger grants are designed to jump-start long-term, sustainable efforts to increase HBCU applications to UC graduate programs by establishing true partnerships.

One of the key benefits of the UC-HBCU program is two years of graduate funding support (tuition and salary) given to any participant who matriculates into a UC doctoral program. Since its inception, 150 HBCU students have participated in the program on 7 campuses, and 19 students have enrolled in UC doctoral programs.

UCSD-Morehouse-Spelman Pathways Program

My home institution of UCSD began to take equity issues seriously in 2010, when incidences of racism led to student and faculty protests, demonstrations and sit-ins, which ultimately led to investigations

by the FBI and Department of Justice [6]. What followed was a series of reforms aimed at making UCSD a more inclusive campus, including the establishment of an Office for the Prevention of Harassment and Discrimination, faculty lines for candidates with strong commitments to enhancing diversity (Proposition 209 prohibits the explicit hiring of faculty based on race), and financial support for the recruitment and retention of students from underrepresented groups. While this has led to modest improvements in the campus climate, the fraction of black students at UCSD remains the lowest of all UCs, and black faculty colleagues – friends – have been denied tenure or wooed away by other institutions, sometimes with little resistance. It is clear that much work remains.

In 2013, UCSD hosted a site visit by senior undergraduates from Morehouse College, an HBCU college for men in Atlanta, GA. The visit was organized by Dr. Willie Rockward,

Chair of the Morehouse Department of Physics and Dual-Degree Engineering, a department notable for producing the largest number of African American Bachelor's in Physics in the US between 2008-2010 [1]. It was at this event that Willie and I first met and talked about making use of the UC-HBCU program, building on our programs' common research (e.g., nanolithography, metamaterials) and education missions (e.g., the UCSD-Morehouse-Spelman Academic Exchange Program). Modeling our program off of an existing Pathways program between UCSD and Howard University in Biology, Physical Sciences and Engineering, we put in a bid for a Pathways grant strictly for Physics and Astronomy, and were excited to receive funding to support 12 Morehouse students over 3 years starting in 2014.

This past June, we welcomed our first class of five Morehouse Physics students. Despite the absence of an Astronomy program at Morehouse, the ma-



The 2014 class of UCSD-Morehouse-Spelman Physics Pathways scholars, with co-directors Adam Burgasser (UCSD) and Willie Rockward (Morehouse) at center

HBCU/TWI Partnerships... (cont'd)

majority of the students decided to pursue astrophysics research over the summer. In addition to their research activities, students participated in weekly development workshops, GRE preparation courses and team-building programs through UCSD's Summer Training Academy for Research in the Sciences (STARS) program. Tapping into this existing resource has been essential to the success of Pathways program; STARS staff not only run the co-education programs for our students, they also provide graduate mentors, coordinate travel and housing, and help students prepare for the Summer Undergraduate Research Conference.

Maintaining our students' connections to UCSD is a key goal for our program. Two of our students stayed on through the Fall term as part of the UCSD-Morehouse-Spelman Academic Exchange Program, which gave them a chance to experience the academic environment of a TWI. We've also provided funding for presentations at national conferences. Christian Aganze, a Morehouse Sophomore who worked with me on characterizing the near-infrared spectra of very low mass stars, received a poster award at October's SACNAS meeting in Los Angeles.

As the UC-HBCU Pathways program supports the development of sustainable partnerships, we have also included faculty exchanges in our program. Willie and I have visited each other's institution twice, and UCSD's Tom Murphy visited Morehouse in 2013. Our plan is to have multiple faculty take up residence at our partner's institution to facilitate faculty interaction and encourage the establishment of research collaborations. We have also explored educational partnerships. Given its large population of Physics majors, Willie and I are looking to establish an Astronomy major at Morehouse College.

Lessons Learned in Year One

While the students were largely successful in their research, we found several areas where improvement is needed. As an 8-week program, preparation prior to the summer is critical for the successful completion of research projects, but not all student-faculty pairs communicated prior to the summer. Following the model of MentorNet, we plan to provide weekly "check-in" reminders to both faculty and students to make sure pre-summer preparations are made. We also had several cases of facul-

ty leaving for extended periods without providing students with dedicated mentors. To prevent the subsequent "floundering", we will require labs to assign at least one graduate student/postdoctoral mentor to make sure students are always supported. Finally, we aim to host additional workshops to teach the technical skills of research, such as robust statistical analysis techniques, Python, LaTeX/BibTeX, and effective literature research methods.

Finally, working with Dr. Marta Dark, we have expanded our program to include Spelman College, an HBCU women's college co-located with Morehouse, and one of the largest originators of African American PhDs in the Physical Sciences [7]. This was made possible by additional funding support from the UCSD Office of Equity, Inclusion and Diversity.

To learn more about the UCSD-Morehouse-Spelman Pathways program, please visit <http://morehousebridge.ucsd.edu>.

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