Ameerah McBride (AURA Chief Diversity Officer)

AURA CY 2019 Diversity and Inclusion Report

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WHAT IS AURA?
AURA at a glance

Non-profit established in 1957

Consortium of universities established to manage public observatories

Representative of the broader astronomical community

Institutional Members: 46 US institutions and 4 international affiliates

AURA employees: roughly 1,500 people
AURA-WIDE DIVERSITY EFFORTS

Space Telescope Science Institute
NOIRLab and National Solar Observatory
Gemini*
Corporate Office

* Statistics were gathered prior to NOIRLab reorganization; in future years, Gemini statistics will be integrated within those of NOIRLab
Majority of AURA employees identify as white (76%) and male (63%)

89% of AURA employees feel that creating an inclusive & respectful environment is vital to attracting talented professionals

88% of AURA employees share the organization’s commitment to diversity and inclusion

The AURA Human Resources teams actively recruit job seekers from the National Assoc. of Black Physicists, Society for Women Engineers, Assoc. for Women in Science, and the Society for Advancement of Chicanos and Native Americans in Science

In 2019, AURA hired its inaugural Chief Diversity Officer (CDO) to work across the organization to implement best practices in the recruitment and retention of an inclusive workforce

Ameerah McBride, AURA CDO
AURA Diversity Recruitment Efforts 1 of 2

Recruitment Guide for search committees (1)

Formal policy of briefing search committees and hiring managers on managing unconscious bias; developed brochure (2)

Monitor demographics of candidate pools throughout the selection processes to ensure adequate representation (already incorporated for hiring and is being implemented in other selection processes as well, e.g., Council member selections)

AURA Diversity Recruitment Efforts 2 of 2

Participation in career fairs targeting historically under-represented groups

• Society of Women Engineers (SWE)
• National Society of Black Physicists (NSBP)
• National Society of Black/Hispanic Engineers (NSBHE)
• Society for the Advancement of Chicanos and Native Americans in STEM (SACNAS)

Pipeline partnerships; other initiatives

• Out to Innovate (LGBTQ+)
• HBCUs and programs such as the Fisk-Vanderbilt Bridge Program
• Minority Serving Institutions
• IINSPIRE program
• National Astronomy Consortium (led by NRAO)
In February 2017, AURA commissioned Infosurv Research to conduct the 2017 AURA Diversity & Inclusion Employee Survey (it included questions from similar internal surveys conducted in 2009 and 2012)

Survey intended to measure employee perceptions of various areas of employee work experience, with special attention paid to fair treatment at work and issues of diversity and inclusion

• 89% of employees satisfied with their AURA Center as an employer

• 89% of employees felt that creating an inclusive & respectful environment is vital to attracting talented professionals

• 88% of employees shared the organization’s commitment to diversity and inclusion

• 83% of employees felt STScI is welcoming to people with disabilities

• 82% reported that employee participation in diversity- and inclusion-related events is encouraged
EMPLOYEE DEMOGRAPHICS BY CENTER

Space Telescope Science Institute
NOIRLab and National Solar Observatory
Gemini*
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* Statistics were gathered prior to NOIRLab reorganization; in future years, Gemini statistics will be integrated within those of NOIRLab
Overall Workforce Demographics (Race/Ethnicity)
Overall Workforce Demographics (Gender)
STScI Demographics (Race/Ethnicity)
STScI Demographics (Gender)

Total AURA Staff by Gender

- Male: 437
- Female: 312

Diversity @ AURA
Gemini Observatory Demographics
(Race/Ethnicity)
Gemini Observatory Demographics (Gender)
NSF Centers* Demographics (Race/Ethnicity)

*NOIRLab and NSO
NSF Centers* Demographics (Gender)

*NOIRLab and NSO

![Graph showing Total AURA Staff by Gender](image)
AURA Corporate Office Demographics

- **Total AURA Staff by Race**
  - White: 80%
  - URM: 20%

- **Total AURA Staff by Gender**
  - Male: 7
  - Female: 10
UNDERGRADUATE, GRADUATE, AND POST DOCTORAL PROGRAMS
In addition...

NOIRLab is the operating partner for the WIYN and SOAR whose University partners use these facilities for student training, especially graduate student education and PhD thesis research.

NOIRLab hosts several tenant observatories at Kitt Peak who support graduate student projects.
NOIRLab work/study programs 1 of 4

~18 undergraduate students/year in Tucson


~4 per year worked on running the dark skies programs at the Cooper Center for Environmental Learning since 2018

~8 were trained to mentor and tutor students at the Ha:san School (a bi-cultural school with 100% minority enrollment), in partnership with the University of Arizona MESCIT initiative

The La Serena School of Data Science in Chile

Funded jointly by NSF and CONICYT (Chile) and CORFO (Chile) and hosted by AURA with Chilean and other participation [http://www.aura-o.aura-astronomy.org/winter_school/]

210 undergraduate and graduate students have attended since 2013: 84 US students, 113 Chilean and 13 international. Gender distribution 91 female, 118 male, and 1 non-binary.
Student Internships at Gemini Observatory

From 2015-2019, Gemini Observatory hosted over 100 student interns, supported by both internal and external funding, supervised by Gemini staff for periods ranging from 1 to 6 months. 

~25 were science interns from universities in the US, Canada, Argentina, Brazil and Chile, spending a semester at Gemini in order to obtain research experience under the supervision of science staff. Others spent one or more semesters in engineering, information technology, software, and public outreach.

Most were supported by Gemini’s Research or Operations budgets.

Jennifer Mead, a Rutgers undergraduate, was mentored by Gemini’s Inger Jorgensen and Kristin Chiboucas. She reduced GMOS spectroscopic data for galaxies at redshift $z = 0.6$. Her research will soon be published, and she is applying to graduate schools where she intends to continue to study the formation and evolution of galaxies and clusters.
Participation in the Akamai Workforce Initiative

- Seeks to build a strong local STEM workforce in Hawaii to serve the needs of current and future astronomical observatories
- Coordinated by the Institute for Scientist and Engineer Educators (ISEE) at UCSC, with funding from many observatories in Hawaii
- Provides training for students and for mentors to ensure that each work placement is successful
- 87% of Akamai students remain in STEM fields following their internships

Gemini North in Hilo has hosted 37 Akamai interns since the program’s start in 2003, and 13 during the last 5 years, 2015-2019
(plans to host more in 2020 were canceled due to COVID-19)
IINSPIRE LSAMP AURA Undergraduate Internships

AURA partnered with the “Iowa, Illinois, Nebraska Louis Stokes Alliance for Minority Participation” (IINSPIRE LSAMP), a Midwest STEM partnership for innovation in research and education.

IINSPIRE is committed to broadening the participation of underrepresented minorities in STEM education in the Midwest.

This program provides students with work and research experience in a major astronomical observatory. Special consideration given to engineering and computer science students.

AURA offered IINSPIRE internships for up to 6 students per year from 2014-2019 at AURA Centers (2020 on hold due to COVID)
Enhancing the Teaching Curricula at Universities

CSDC staff guest-taught portions of the University of Arizona AST502 graduate course on “Data Mining and Machine Learning in Astronomy”

• The ANTARES team demonstrated their time-domain alert broker to the graduate class: described the system, demonstrated interaction via Jupyter notebooks, and showed how to create filters to flag events of interest

• The DataLab team delivered guest lectures to the UofA AST502 course

DataLab served as practical example in Survey Science for Graduate Courses at other Universities, including: University of Washington, Sternberg Astronomical Institute & Lomonosov Moscow State University, Lehigh University, and others
STScI Pipeline Development and Outreach Initiatives

• Steering Committee formed for oversight
• Focus is Baltimore County/City Public Schools, as well as HBCUs and MSIs in the Baltimore-Washington D.C. area
• Request portal created to allow general public, students, schools and universities to request internships, mentors, activities, etc.
• Middle/High School Pipeline Development Strategy: Youth for Astronomy and Engineering. Visits conducted with two Baltimore City High Schools, and community nights hosted for talks and activities for middle/high school students and their families
• Undergraduate/Graduate – Partnerships with HBCUs and MSIs for onsite activities and creating internship opportunities (year-round and summer program)
• Activities held at and partnerships built with Morgan State University, University of Maryland, Baltimore County, Towson University and Capital Technology University
STScI’s Space Astronomy Summer Camp

- Runs 9 weeks each summer at STScI
- Students paired with project sponsors in research, engineering and outreach
- 15 students selected each year
- At least 4 must be from local colleges with an emphasis on HBCUs and MSIs
- Each year 3 students sponsored via a partnership with the National Astronomy Consortium (led by NRAO) for research opportunities for under-represented students; sponsorship continues for 1 year and includes attendance at AAS
Graduate Students at STScI

Joint Program with Johns Hopkins University

- Program Manager is part of the STScI Science Mission Office
- Work with JHU to identify students from the University and advisors from STScI research staff
- Careful attention paid to diversity and inclusion in identifying student/advisor relationships

JHU grad students S. Wolff and A. Greenbaum (3rd and 7th from left) visited the Gemini South telescope as part of the Extrasolar Planetary Systems Imaging Group at STScI, for commissioning of the Gemini Planet Imager
Post Doctoral Researchers at STScI

• Three years ago STScI created a Postdoc hiring committee which reviews all postdoc hires
• Objective was to improve diversity in postdocs hires
• Significant increase in the hiring of postdocs who identify as female
• Mixed results in the hiring of postdocs who identify as other than white
NSO Undergraduate Programs 1 of 4 – Citizen CATE

Nationwide 2017 eclipse engagement program involving donating telescopes to communities along the path of totality

22 schools and 27 universities partnered

7 CATE undergraduate interns trained in:
  • Eclipse research and data analysis
  • Equipment assembly and maintenance
  • Training others in using telescopes
  • Development of software for data acquisition
  • Public outreach
NSO partnered with 8 Boulder-based research institutes specializing in solar and space physics

Applications for program doubled in 2018 (held steady in 2019): Pre 2017 = ~160 per year; 2018 = 403; 2019: 431

Running remotely for 2020: 24 students from across the world

Strong focus on actively recruiting students traditionally under-represented in STEM

- Community college students encouraged; liberal arts students dominate the participant pool
- 78% female participation averaged over 10-year lifetime of the project
- New efforts to recruit Hawaii-based students to prepare future DKIST researchers
- Renewed efforts in recruitment policies (e.g., inclusive language on application form, move demographics question to end of application form to reduce stereotype threat, FAQ to support filling out form), student support and training (anti-harassment training, welcoming students preferred pronouns, accommodations for students with dependents) to increase accessibility
NSO Undergraduate Programs 3 of 4 – Akamai

Hawai‘i focused internship/apprenticeship program run by UCSC

Supports the Hawaii telescope workforce

Prepares local college students for telescope jobs

Contributes to a healthy workforce through internships in STEM fields

Of 24 engineers employed by AURA for the Daniel K. Inouye Solar Telescope construction project on Haleakala, 6 are women, and 4 of those 6 are Akamai alumni from Hawaii
Undergraduate Studio Design Class: “Building an Immersive Science Exhibit”, a class on exhibit design for museum spaces co-taught by NSO staff

Innovative collaboration between NSO, Fiske Planetarium, and ATLAS Institute (CU Department)

Focus on developing exhibits to explain magnetic fields in the Sun and space

Enhanced development for students enrolled in class
- Most come from graphics arts and engineering background
- Exposes them to solar astronomy
- Increases awareness of wide-ranging astronomy career prospects outside of “Astronomer”
NSO Graduate/Post-doc Programs 1 of 3 – Spectropolarimetry Grad School

A 2-week immersive school in Estes Park, Colorado, in partnership with NCAR & HAO, Oct 2018

28 graduate students and postdoctoral fellows from around the world

Focus on “Understanding and using inversion techniques for use in the DKIST-era”

AURA/NSO provided:

• Facilitation expertise
• Recordings of all lectures (still being processed but will be freely available on NSO webpage when complete)
• Summative (daily) and formative evaluation

Evaluation found:

• Knowledge increased on average by 3.8 of 10 points
• Largest gains in using spectropolarimetric data (6 of 10 pts increase)
• And using inversion codes (5.3 of 10 pts increase)

Scheduled to be repeated in Fall 2020, COVID-dependent
The DKIST Ambassador program provides financial support for graduate students and/or postdoctoral researchers at US universities for up to two years. Goal is to create a well-networked cohort of DKIST Data experts at US Universities.
NSO Graduate/Postdoc Programs 3 of 3 – Data Workshops

NSO is organizing DKIST data training workshops

Focus on early career researchers

Training in common data reduction and analysis techniques needed for DKIST

Preparing for DKIST: an introduction to ground-based data
A first introduction to DKIST, and to ground-based data types, issues, and common reduction and analysis techniques.

Workshop dates:
4 – 7 June 2019 (Boulder, CO)

Preparing for DKIST: Image processing and Time Series
A primer on the effects of atmospheric seeing and their correction; time series and multi-instruments analysis.

Workshop dates:
13 – 15 January 2020 (Northridge, CA)

Preparing for DKIST: Milne-Eddington Inversions of Spectropolarimetric data
A first guide to inversion techniques for spectro-polarimetric data.

Workshop dates:
April 20-22, 2020 (FairFax VA)
INFORMATION ABOUT AURA’S DIVERSITY, EQUITY, AND INCLUSION ACTIVITIES
AURA's Centers enable the next decade of astronomical discoveries through world-class facilities and science.

SCIENCE NEWS

WFIRST Telescope Named For 'Mother of Hubble' Nancy Grace Roman

COVID-19 update on AURA Operations and Facilities

NSF's Newest Solar Telescope Produces First Images

AURA enables astronomical discovery and promotes broad engagement in exploring the Universe.

Diversity and Inclusion

Encouraging Diversity and Inclusion

AURA, as a leader in the astronomical community, develops and supports programs that advance our organizational commitment to diversity, broadens participation, and encourages the advancement of diversity throughout the astronomical scientific workforce.

AURA is committed to the people who support our mission in the astronomical and related sciences. We are deeply invested in developing and improving our policies and practices to create a welcoming and productive work environment. AURA believes that a diverse and inclusive workforce, particularly one that includes women and individuals from under-represented minority groups, contributes to excellence both in our organization and the entire scientific community as a whole.

Diversity and Inclusion Information

- Diversity and Inclusion Policy
- Diversity and Inclusion Resources
- Diversity and Inclusion Reports
- diverse & inclusive employment

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