LAUREN M. CHAMBERS

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EDUCATION

2013-2017 **Yale University,** New Haven, CT
B.S. in Astrophysics and African American Studies, *magna cum laude*
Theses: *A Different Kind of Dark Energy: Placing Race and Gender in Physics*
Understanding Gas-Phase Ammonia (NH_3) Chemistry in Proto-Planetary Disks

PROFESSIONAL EXPERIENCE

American Civil Liberties Union of Massachusetts, Boston, MA
2019 – Pres. *Technology Fellow*

- Supporting the Technology for Liberty Project in promoting synergy between new technology and civil rights
- Exploring and visualizing government datasets with Python and R
- Using data to inform citizens about the effects of legislation and political leadership
- Supporting ACLUM campaigns

Space Telescope Science Institute, Baltimore, MD
2018 – 2019 *Research and Instrument Analyst II*
2017 – 2018 *Research and Instrument Analyst I*

- Supporting the James Webb Space Telescope mission in preparation for launch and commissioning in 2021
  - Developing interactive software tools in Python using engineering best practices
  - Writing procedures for and participating in team commissioning operational rehearsals
  - Enhancing existing simulator software to generate higher-fidelity commissioning images
  - Analyzing results of fine guidance sensor flight software simulations
- Deputy Technical Lead for JWST Quicklook (observatory performance trending and analysis application)
  - Managing collaborative software development with GitHub
  - Designing web application in Python Django
- Developing Jupyter notebook tutorials with the Community Software Initiative
- Promotion received for superior performance during first year

RESEARCH EXPERIENCE

2016-2017 **Harvard-Smithsonian Center for Astrophysics and Banneker Institute**, Cambridge, MA
Advisors: Dr. Karin Öberg and Dr. Ilse Cleeves

- Optimizing a numerical astrochemical model to investigate NH_3/H_2O ratios in proto-planetary disks
- Developing modularized and object-oriented Python wrapper for a Fortran algorithm
- Reviewing and discussing social justice literature on topics and challenges faced by scholars from underrepresented populations within the broader academic environment and world
- Curriculum on public speaking, astrophysical concepts, and computational skills

2016-2017 **Yale African American Studies Department,** New Haven, CT
Advisor: Dr. Hazel Carby

- Analyzing physical and astronomical theory through the perspective of Black women in an effort to understand the effects of a racist-sexist society on scientific ways of knowing

- Applying the astrophysical concepts of dark energy and dark matter as lenses to better understand white male hegemony in the physical sciences
- Syncretizing science studies, critical race theory, and feminist theory
- Conducting oral histories with five Black women PhD astronomers and physicists

2015-2016 **Yale Wright Laboratory**, New Haven, CT
Mentor: Dr. Reina Maruyama
- Designing and constructing a cryogenic spectrometer for the DM-Ice South Pole dark matter study
- Data reduction and statistical analysis of spectral data sets with Python and Jupyter notebooks
- 3D Modeling using Google Sketch-Up

2015 **NASA Goddard Spaceflight Center**, Greenbelt, MD
Mentors: Dr. Alexander Kutyrev & Dr. Neil Gehrels
- Developing modular software in LabVIEW for the Rapid Imager/Spectrometer (RIMAS) instrument, to be installed in the Discovery Channel Telescope at Lowell Observatory in Arizona

2012-2013 **Thomas Jefferson National Accelerator Facility**, Newport News, VA
Mentor: Dr. Marcy Stutzman
- Operating the "micro-Mott" electron polarimeter to characterize a novel Gallium Arsenide superlattice structure (GaAsSb) for use in photocathodes
- Automatizing polarimeter controls and improving data acquisition software using LabVIEW

HONORS & AWARDS

Aug. 2018 **American Astronomical Society Education & Professional Development Grant** Awardee, in support of the Know Your Power Project Workshop at the 2019 AAS Winter Conference

Apr. 2018 **STScI Team Achievement Award**, *"for organization of the workshop 'Concrete Steps to Make your Institution More Inclusive'"*

May 2017 **Phi Beta Kappa,** Alpha chapter of Connecticut

May 2017 **George Beckwith Prize**, *"to the undergraduate most proficient in some branch of astronomy."*

May 2017 **William Pickens Prize**, *"for an outstanding senior essay in the field of African American Studies."*

2015-2017 **Edward A. Bouchet-Robertson Fellowship,** *"to increase the number of minority students and others with a demonstrated commitment to eradicating racial disparities, who will purse PhDs and subsequent careers in academia."*

Jan. 2017 **Chambliss Outstanding Student Poster Presentation Award,** AAS Winter Conference 2017

Aug. 2015 **NASA Goddard John Mather Nobel Scholar**

2013 **National Achievement** Scholar; **National Merit** Scholarship Finalist

MENTORSHIP & COMMUNITY INVOLVEMENT

2018-2019 "**Know Your Power" Workshop Organizer**, 2019 Winter AAS Conference
Designing, organizing, and facilitating a workshop in which participants learn from a panel to examine what power is available to them, at all career stages, to improve institutions; Funded by the AAS Education Committee; Featured on astrobites.org

2019 **"Build a Website in 60 Minutes or Less" Workshop Facilitator**, 2019 Winter AAS Conference
Facilitating a workshop in which participants use GitHub pages to build and launch a website in <60 min.

2019 "**Using Python for Astronomical Data Analysis" Workshop Facilitator**, 2019 Winter AAS Conference
Facilitating a workshop introducing participants to Astropy and affiliated Python packages

2018 – 2019 **Diversity and Inclusion Working Group Member**, STScI
Developing policies and practices in collaboration with the Director's Office to "establish and uphold a

civil and inclusive environment for a diverse staff

2018 – 2019 **Social Justice Reading Group Organizer**, STScI
Curating and facilitating a bi-monthly reading group that studies social justice concepts

2017-2019 **"Concrete Steps to Make Your Workplace More Inclusive" Workshop Organizer**, STScI
Workshop developing awareness of privilege and discussing various axes of identity that are frequently marginalized in astronomy; conducted at STScI in Fall 2017 and at the 231st AAS Conference

2016-2017 **First-year Counselor**, Yale College Dean's Office
Competitive leadership and disciplinary role providing academic, professional, social, and emotional support for incoming first years

2015-2016 **Science, Technology, and Research Scholars (STARS) Peer Mentor,** Yale College Dean's Office
Advising and mentoring freshmen in STEM who are women, minorities, economically underprivileged, or otherwise underrepresented

2015-2017 **Yale Physics Department Climate & Diversity Committee**, Undergraduate Representative
Meeting with faculty, staff, and graduate students to discuss and improve inclusion in Yale Physics

2014-2016 **Yale Undergraduate Aerospace Association**
Optical Telescope Team: Secondary project leader; designing and constructing a 16" optical Dobsonian equatorial-mounted telescope; presenting about astronomy to local middle school
Radio Telescope Team: Designing and constructing a 2.4 m radio telescope; developing telescope pointing software

2015-2017 **Yale STEM Likely Team**, Yale Admissions Office
Corresponding with and advising prospective astrophysics students about STEM at Yale

2015-2016 **Science Tour Guide**, Yale Admissions Office
Leading detailed tours of Yale science facilities for prospective science students

2014-2016 **Yale Women in Physics Club**, Secretary
Organizing social events, meetings with professors, and study groups to strengthen community for female physics students

2014-2017 **Racial and Ethnic Openness Club**
Undergraduate discussion group exploring multiracial identity

2014-2015 **Yale DEMOS**
Presenting fun science experiments to New Haven elementary school classes

ADDITIONAL SKILLS

Software Development:
- Python (including pandas, matplotlib, NumPy, Astropy, SciPy, PyQt, Django, scikit-learn, Jupyter notebooks; specific coursework in astronomical research methods, astrostatistics, and data mining)
- git (GitHub & GitLab)
- Unix/Bash
- HTML, CSS, Javascript
- LabVIEW
- Scrum software development
- Continuous integration (Travis/Jenkins/GitLab CI)

General Computer:
- Microsoft Office
- iWork
- LaTeX
- Atlassian collaboration tools (Jira, Confluence, Sourcetree)

Language:
- Spanish (intermediate speaking, reading, and writing)
- French (intermediate reading, basic speaking and writing)

PROFESSIONAL MEMBERSHIPS

2018-Present Society for the Advancement of Chicanos and Native Americans in STEM
2017-Present American Astronomical Society

2016-Present National Society of Black Physicists
2016-2017 American Association for the Advancement of Science
2015-2017 American Physical Society

POSTERS & PRESENTATIONS

Preparing for JWST Commissioning, Calibration, and Science with the Multi-Instrument Ramp Generator (MIRaGe)

- *Poster:* Jan. 2019, 233rd American Astronomical Society Winter Conference

A Different Kind of Dark Energy: Placing Race and Gender in Physics

- *Talk:* Sep. 2018, (dot) Astronomy X Conference (webcast)
- *Talk:* Apr. 2017, Yale Mellon-Bouchet Fellowship Senior Symposium
- *Talk:* Apr. 2017, Yale Astronomy Senior Thesis Colloquium
- *Talk:* Apr. 2017, Yale Undergraduate Ethnic Studies Colloquium
- *Talk:* Apr. 2017, Yale African American Studies Senior Thesis Colloquium
- *Talk:* Nov. 2016, Timothy Dwight College Mellon Forum

Expanding Functionality of the Commissioning Tool for FGS

- *Talk:* Oct. 2017, STScI Research & Instrument Analysis Branch Meeting

The Legacy of Black Physicists at Yale

- *Talk:* May 2017, History Keepers Project Symposium

Understanding Ammonia Chemistry in Protoplanetary Disks

- *Talk:* Apr. 2017, Yale Astronomy Senior Thesis Colloquium
- *Poster:* Jan. 2017, 229th American Astronomical Society Winter Conference (PDF)
- *Poster:* Oct. 2016, National Society of Black Physicists Conference, Fermilab
- *Talk:* Sep. 2016, Mellon Mays Northeastern Regional Undergraduate Conference, Wellesley College
- *Talk:* Sep. 2016, Yale Astronomy Department Fall 2016 Undergraduate Kick-Off
- *Poster:* Sep. 2016, Yale Undergraduate Research Symposium
- *Talk:* Aug. 2016, Banneker Institute Symposium, Harvard-Smithsonian CfA (webcast)

Design of a High-Purity Germanium Compton Spectrometer for the DM-Ice Dark Matter Search

- *Talk:* May 2016, Yale Wright Laboratory
- *Talk:* Mar. 2016, Mellon Regional Writing and Research Symposium, Yale University

Modularized Software Control of the RIMAS Instrument for Rapid-Response Gamma Ray Burst Observations

- *Poster:* Aug. 2015, NASA Goddard Space Flight Center Summer Student Poster Session (PDF)

Characterization of the GaAsSb Photocathode with the Micro-Mott Electron Polarimeter

- *Poster:* Aug. 2013, Jefferson Lab Summer Student Poster Session
- *Talk:* May 2013, Governor's School for Science & Technology Senior Symposium