

# 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<sub>3</sub>) 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 and enable accountability about the effects of legislation and political leadership
- Supporting ACLUM campaigns and litigation

**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: <https://github.com/spacetelescope/jwql>
  - 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<sub>3</sub>/H<sub>2</sub>O 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 **STScl 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 pursue 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

- 2019 **"Drag v. AI" Workshop Organizer**, Boston Public Library  
*Collaborated with the Algorithmic Justice League to organize and facilitate a workshop for high schoolers to explore drag makeup as a method for resistance to facial analysis "cis-tems." Specifically presented on actions students can take locally to resist face surveillance in schools.*
- 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: [http://tiny.cc/KYP\\_Astrobites](http://tiny.cc/KYP_Astrobites)*

- 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**, STScl  
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**, STScl  
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**, STScl  
Workshop developing awareness of privilege and discussing various axes of identity that are frequently marginalized in astronomy; conducted at STScl in Fall 2017 and at the 231<sup>st</sup> 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



## ADDITIONAL SKILLS

### Software Development & Data Analysis:

- Python (including pandas, matplotlib, NumPy, Astropy, SciPy, PyQt, Django, scikit-learn, Jupyter notebooks; specific coursework in astronomical research methods, astrostatistics, and data mining)
- R (including dplyr, ggplot, leaflet)
- 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)

2017-Present	American Astronomical Society
2018-2019	Society for the Advancement of Chicanos and Native Americans in STEM
2016-2017	National Society of Black Physicists
2016-2017	American Association for the Advancement of Science
2015-2017	American Physical Society

**Preparing for JWST Commissioning, Calibration, and Science with the Multi-Instrument Ramp Generator (MIRaGe)**  
 - Poster: Jan. 2019, 233<sup>rd</sup> American Astronomical Society Winter Conference

- *Talk:* Sep. 2018, (dot) Astronomy X Conference (webcast: [http://tiny.cc/dotAstroX\\_ADKODE](http://tiny.cc/dotAstroX_ADKODE))
- *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

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

- *Talk:* Apr. 2017, Yale Astronomy Senior Thesis Colloquium
- *Poster:* Jan. 2017, 229<sup>th</sup> American Astronomical Society Winter Conference  
(PDF: <http://tiny.cc/ChambersAAS2017>)
- *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: <http://www.youtube.com/watch?v=uliyO51gYV0>)

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

- Poster: Aug. 2015, NASA Goddard Space Flight Center Summer Student Poster Session (PDF: [https://laurenmarietta.github.io/pdfs/Chambers\\_GSFC\\_RIMAS\\_poster.pdf](https://laurenmarietta.github.io/pdfs/Chambers_GSFC_RIMAS_poster.pdf))

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



## PUBLISHED PAPERS

- "A Different Kind of Dark Energy: Evidence for Placing Race and Gender in Physics," **Lauren M. Chambers**, *Astro2020: Decadal Survey on Astronomy and Astrophysics*, APC white papers, no. 162; *Bulletin of the American Astronomical Society*, Vol. 51, Issue 7, id. 162 (2019), Bibcode: 2019BAAS...51g.162C
- "STEM Climate survey developed through student–faculty collaboration," Claudia De Grandi, Zachary B. Smithline, Philip M. Reeves, Laura G. Goetz, Nathaniel Barbour, Erika Hairston, Joyce Guo, Fadeke Muraina, Joel A. Bervell, **Lauren M. Chambers**, Helen Caines, Andrew D. Miranker & Simon G. J. Mochrie (2019), *Teaching in Higher Education*, DOI: 10.1080/13562517.2019.1636219