

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 (NH₃) Chemistry in Proto-Planetary Disks



PROFESSIONAL EXPERIENCE

American Civil Liberties Union of Massachusetts, Boston, MA

2020 – Pres. *Staff Technologist*

2019 – 2020 *Technology Fellow*

- Promotion to permanent staff technologist (first to hold role) after less than a year for exceptional performance
- 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
- Updating and maintaining the Data for Justice website: data.aclum.org
- Creating data visualizations to highlight civil rights issues during COVID-19 pandemic: data.aclum.org/covid-19/

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 NH₃/H₂O 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 , <i>"for organization of the workshop 'Concrete Steps to Make your Institution More Inclusive'"</i>
May 2017	Phi Beta Kappa , Alpha chapter of Connecticut
May 2017	George Beckwith Prize , <i>"to the undergraduate most proficient in some branch of astronomy."</i>
May 2017	William Pickens Prize , <i>"for an outstanding senior essay in the field of African American Studies."</i>
2015-2017	Edward A. Bouchet-Robertson Fellowship , <i>"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."</i>
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

2020	Coding it Forward Mentor <i>Supporting a college student participating in the Coding it Forward Fellowship by advising on professionalism and the landscape of civic technology careers.</i>
2020	MIT COVID-19 Virtual Datathon Mentor <i>Collaborating with organizers to pose compelling research questions for teams; advising two teams on week-long projects pursuing new research insights related to COVID-19, disparities, and policy.</i>
2019	"Drag v. AI" Workshop Organizer , Boston Public Library <i>Collaborating 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 presenting on actions students can take locally to resist face surveillance in schools.</i>
2018-2019	"Know Your Power" Workshop Organizer , 2019 Winter AAS Conference <i>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</i>
2019	"Build a Website in 60 Minutes or Less" Workshop Facilitator , 2019 Winter AAS Conference <i>Facilitating a workshop in which participants use GitHub pages to build and launch a website in <60 min.</i>
2019	"Using Python for Astronomical Data Analysis" Workshop Facilitator , 2019 Winter AAS Conference <i>Facilitating a workshop introducing participants to Astropy and affiliated Python packages</i>
2018 – 2019	Diversity and Inclusion Working Group Member , STScl <i>Developing policies and practices in collaboration with the Director's Office to "establish and uphold a civil and inclusive environment for a diverse staff"</i>
2018 – 2019	Social Justice Reading Group Organizer , STScl <i>Curating and facilitating a bi-monthly reading group that studies social justice concepts</i>
2017-2019	"Concrete Steps to Make Your Workplace More Inclusive" Workshop Organizer , STScl <i>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 231st AAS Conference</i>
2016-2017	First-year Counselor , Yale College Dean's Office <i>Competitive leadership and disciplinary role providing academic, professional, social, and emotional support for incoming first years</i>
2015-2016	Science, Technology, and Research Scholars (STARS) Peer Mentor , Yale College Dean's Office <i>Advising and mentoring freshmen in STEM who are women, minorities, economically underprivileged, or otherwise underrepresented</i>
2015-2017	Yale Physics Department Climate & Diversity Committee , Undergraduate Representative <i>Meeting with faculty, staff, and graduate students to discuss and improve inclusion in Yale Physics</i>
2014-2016	Yale Undergraduate Aerospace Association <i>Secondary project leader; designing and constructing two telescopes; signing and constructing a 2.4 m radio telescope; developing telescope pointing software; presenting about astronomy to local middle school</i>
2015-2017	Yale STEM Likely Team , Yale Admissions Office <i>Corresponding with and advising prospective astrophysics students about STEM at Yale</i>
2015-2016	Science Tour Guide , Yale Admissions Office <i>Leading detailed tours of Yale science facilities for prospective science students</i>
2014-2016	Yale Women in Physics Club , Secretary <i>Organizing social events, meetings with professors, and study groups to strengthen community for female physics students</i>
2014-2017	Racial and Ethnic Openness Club <i>Undergraduate discussion group exploring multiracial identity</i>

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, shiny)
- 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

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



POSTERS & PRESENTATIONS

Unpacking the Boston Regional Intelligence Center (BRIC) Budget

- *Talk:* July 2020, Boston City Council Public Safety Committee Hearing ([recording](#))

Unpacking the Boston Police Budget

- *Talk:* August 2020, Boston Women in Machine Learning & Data Science Meetup
- *Talk:* July 2020, ACLU of Massachusetts Webinar on Police Accountability
- *Talk:* June 2020, Boston City Council FY21 Budgetary Hearing ([recording](#))

Using Data to Support Civil Liberties Advocacy During the COVID-19 Pandemic

- *Talk:* July 2020, Coding it Forward Summer Fellowship Talk Series
- *Talk:* Apr. 2020, ACLU Nationwide Staff Convening (1100+ in attendance on Zoom)
- *Talk:* Apr. 2020, ACLU Nationwide Webinar on Race & COVID-19

Banning Government Face Surveillance in Massachusetts

- *Talk:* July 2020, RightsCon ([recording](#))
- *Talk:* July 2020, Race, Science, & Society Class at University of Maryland, Baltimore County
- *Talk:* Apr. 2020, Urban Science for Social Good Class at MIT
- *Talk:* Nov. 2019, Drag v. AI Workshop ([event video](#))

A More Perfect Deployment: Where the ACLU Meets AI

- *Talk:* Mar. 2020, Harvard Center for Research on Computation and Society Workshop on AI for Social Impact

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

- Poster: Jan. 2019, 233rd American Astronomical Society Winter Conference ([PDF](#))

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

- Talk: Sep. 2018, (dot) Astronomy X Conference ([recording](#))
- 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

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, Bancker Institute Symposium, Harvard-Smithsonian CfA ([recording](#))

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



PUBLICATIONS & PAPERS

Analytic Blogs

- "Break up with the BRIC: Unpacking the Boston Regional Intelligence Center budget," July 22nd, 2020: <https://data.aclum.org/2020/07/22/break-up-with-the-bric-unpacking-the-boston-regional-intelligence-center-budget/>
- "Unpacking the Boston Police budget," June 5th, 2020: <https://data.aclum.org/2020/06/05/unpacking-the-boston-police-budget/>
- "Internet deserts prevent remote learning during COVID-19," May 13th, 2020: <https://data.aclum.org/2020/05/13/internet-deserts-prevent-remote-learning-during-covid-19/>
- "Incarcerated and in danger: COVID-19 in Massachusetts prisons & jails," April 15th, 2020: <https://data.aclum.org/2020/04/15/incarcerated-and-in-danger-covid-19-in-massachusetts-prisons-jails/>

"Data show COVID-19 is hitting essential workers and people of color hardest," April 7th, 2020: <https://data.aclum.org/2020/04/07/covid-19-disproportionately-affects-vulnerable-populations-in-boston/>

"Five fast facts from the federal study of demographic bias in facial recognition," February 3rd, 2020: <https://privacysos.org/blog/five-fast-facts-from-the-federal-study-of-demographic-bias-in-facial-recognition/>

Academic Journals

"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