Lauren M. Chambers

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EDUCATION

2021 – Present **University of California, Berkeley**
Ph.D. in Information Management & Systems (School of Information)
Advised by Prof. Deirdre Mulligan

2013 – 2017 **Yale University**
B.S. in Astrophysics and African American Studies
Theses: *A Different Kind of Dark Energy: Placing Race and Gender in Physics*
Understanding Gas-Phase Ammonia (NH_3) Chemistry in Proto-Planetary Disks
Honors: Phi Beta Kappa, *magna cum laude*, graduated with distinction in both majors, departmental prizes in both majors

PROFESSIONAL EXPERIENCE

American Civil Liberties Union of Massachusetts, Boston, MA
2020 – 2021 *Staff Technologist*
2019 – 2020 *Technology Fellow*

- Promotion to permanent staff technologist (first to hold role) after less than a year for exceptional performance
- Advancing the Technology for Liberty Project in promoting synergy between new technology and civil rights
    - Consulting on and writing about how the latest technological research affects algorithmic governance
- Supporting advocacy around responsible technology, racial justice, criminal law reform, government accountability, and other civil rights issues by using data to inform citizens and enable accountability about the effects of litigation, legislation, and political leadership
    - Exploring, analyzing, and visualizing government datasets with R
    - Developing interactive web interfaces for public data visualizations in R Shiny, HTML, CSS, & Javascript
    - Evaluating civil rights concerns during the COVID-19 pandemic: data.aclum.org/covid-19/
    - Engaging the public in ACLU work and public interest technology through talks, blogs, and tweets
- Updating and maintaining the Data for Justice server and website: data.aclum.org

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

- Promotion received for superior performance during first year
- 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
    - Building and designing web application in Python Django
- Developing Jupyter notebook tutorials with the Community Software Initiative

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

2020 – Pres. **Harvard Berkman Klein Center for Internet & Society**, Affiliate

Aug. 2021 **Berkeley Fellowship**, *"awarded to outstanding applicants to doctoral programs in all fields"*

Aug. 2021 **I School Graduate Scholar Program,** for students who have *"shown leadership in diversity, equity, and inclusion, and/or plan to do research on inequality"*

Nov. 2020 **Boston Bar Association President's Award**, for involvement in *CPCS vs. Chief Justice of the Trial Court* which advocated on behalf of incarcerated individuals in Massachusetts prisons & jails during COVID-19

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

2020 – Pres. **Mentor,** Coding it Forward Civic Digital Fellowship
Advising students on professionalism and the landscape of civic technology careers

July 2021 **"Effective Data Visualization" Workshop Organizer**, Boston University Spark! Lab
Designing and facilitating workshop to explore effective data visualization techniques

2020 – 2021 ***Police in Politics* Project Advisor**, Boston University Spark! Lab
Advising data science projects around policing with Boston University students as ACLU representative

Dec. 2020 **Mentoring Roundtable**, 2020 NeurIPS Women in Machine Learning Workshop
Advising early-career women in computer science about work within non-profit organizations

Sept. 2020 **Mentoring Circle**, 2020 Virtual Grace Hopper Conference
Advising early-career women in tech on "How To Adult" (bit.ly/how-to-adult)

May 2020 **Mentor**, MIT COVID-19 Virtual Datathon
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.

Nov. 2019 "**Drag v. AI" Workshop Organizer**, Boston Public Library
Collaborating with the Algorithmic Justice League to organize and facilitate a workshop exploring drag makeup as resistance to facial analysis "cis-tems." Presenting on local ACLU political advocacy.

2018 – 2019 "**Know Your Power" Workshop Organizer**, 2019 Winter AAS Conference
Designing, organizing, and facilitating a panel workshop to examine what power participants hold, at all career stages, to improve institutions; Funded by the AAS Education Committee; Featured on astrobites

Jan. 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.

Jan. 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 with the Director's Office towards "a civil and inclusive environment"

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; conducted 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 underrepresented first years in STEM (gender & racial minorities)

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**
Secondary project leader; designing and constructing two telescopes; developing telescope pointing software; presenting about astronomy to local middle school

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 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, shiny)
- git (GitHub & GitLab)
- Unix/Bash
- HTML, CSS, Javascript
- LabVIEW
- Scrum software development
- Continuous integration (Travis/Jenkins/GitLab CI)
- Server management with Apache

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 – 2019 American Astronomical Society (AAS)
2018 – 2019 Society for the Advancement of Chicanos and Native Americans in STEM (SACNAS)
2016 – 2017 National Society of Black Physicists
2016 – 2017 American Association for the Advancement of Science
2015 – 2017 American Physical Society

PUBLICATIONS & PAPERS

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

Analytic Blogs & Reports

"More Of The Same: Unpacking The 2022 Boston Police Budget," May 6, 2021: https://data.aclum.org/2021/05/06/more-of-the-same-unpacking-the-2022-boston-police-budget/

"A Mayor's Roadmap To Curb Boston Police Overtime," April 14, 2021: https://data.aclum.org/2021/04/14/a-mayors-roadmap-to-curb-boston-police-overtime/

"How To Programmatically Create Dozens Of Wordpress Pages To Catalogue Thousands Of Documents," *Python In Plain English*, March 11, 2021: https://python.plainenglish.io/how-to-programmatically-create-dozens-of-wordpress-pages-to-catalogue-thousands-of-documents-f3f531fdff84

"Clearview, Cameras, and Karen: Newly Released Documents Expose Facial Recognition Technologies Used Across Massachusetts," March 1, 2021: https://data.aclum.org/2021/03/01/clearview-cameras-and-karen-newly-released-documents-expose-facial-recognition-technologies-used-across-massachusetts/

"Data Show COVID-19 Out of Control Across Massachusetts Prisons and Jails," December 22, 2020: https://data.aclum.org/2020/12/22/data-show-covid-19-out-of-control-across-massachusetts-prisons-and-jails/

"Boston Police Department Court Overtime," November 16, 2020: https://data.aclum.org/wp-content/uploads/2020/11/BPD-Court-Overtime-Report-ACLUM-Progressive-Mass-BU.pdf

"Bias all the way down: Research shows domino effect when humans use face recognition algorithms," September 22, 2020: https://privacysos.org/blog/bias-all-the-way-down-research-shows-domino-effect-when-humans-use-face-recognition-algorithms/

"Wear a mask: Federal study finds COVID-19 masks fool face recognition," August 28th, 2020: https://privacysos.org/blog/wear-a-mask-federal-study-finds-covid-19-masks-fool-face-recognition/

"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/

POSTERS & PRESENTATIONS

Technology for Liberty: Advocating For (and With) Responsible Tech in Massachusetts

- *Invited Talk:* July 2021, Coding it Forward summer fellowship talk series
- *Invited Talk:* Dec. 2020, Harvard Women in Technology + Allies speaker series
- *Invited Talk:* Nov. 2020, *Impactful* Social Impact Technology community speaker series
- *Invited Talk:* Sep. 2020, Stanford Public Interest Technology Lab fall speaker series
- *Invited Talk:* Sep. 2020, Davidson College Math & CS Department Colloquium (recording)
- *Invited Talk:* July 2020, *Race, Science, & Society* class at University of Maryland, Baltimore County

From Astrophysics to the ACLU: Physics, Data, and Justice

- *Invited Talk:* Apr. 2021, Notre Dame Physics Department Colloquium

Public Interest Technology: Using Data & Technology for Good

- *Invited Talk:* Feb. 2021, Harvard Model Congress seminar

Banning Government Face Surveillance in Massachusetts

- *Talk:* Jan. 2021, *Algorithms and Society* class at the University of Michigan
- *Invited Talk:* Sep. 2020, *AI and the Law* class at Boston College
- *Talk:* July 2020, RightsCon (recording)
- *Invited Talk:* Apr. 2020, *Urban Science for Social Good* class at MIT
- *Talk:* Nov. 2019, Drag v. AI Workshop (event video)

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

- *Invited Talk:* Sep. 2020, Davidson College Physics Department Colloquium
- *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

Unpacking the Boston Regional Intelligence Center (BRIC) Budget

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

Unpacking the Boston Police Budget

- *Invited Talk:* Aug. 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 (1,100+ in attendance on Zoom)
- *Talk:* Apr. 2020, ACLU Nationwide Webinar on Race & COVID-19

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)

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 (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