

# LAUREN M. CHAMBERS

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## EDUCATION

2021 – Pres. **University of California, Berkeley**

Ph.D. in Information Science (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<sub>3</sub>) Chemistry in Proto-Planetary Disks*

Honors: Phi Beta Kappa, *magna cum laude*, graduated with distinction in both majors, departmental prizes in both majors

## RESEARCH EXPERIENCE

**Berkeley School of Information**

*Doctoral Research*

2021 – Pres.

*A Taxonomy of Black Algorithmic Resistance*

- Exploring how and why Black advocates resist algorithmic injustice; characterizing Black contributions to algorithmic resistance ideologies and tactics; engaging with critical algorithm studies and Black studies
- Designing a mixed-methodology study, including thematic analysis of interviews with Black algorithmic advocates, policy documents, and multimedia

*Public Engagement, Differential Privacy, & the US Census | Collaborators: Amina Abdu, Abbie Jacobs, Deirdre Mulligan*

- Examining the Census Bureau's implementation of differential privacy for the 2020 disclosure avoidance system in order to interrogate the role of public participation and engagement in algorithmic development processes
- Analyzing publicly available documents and evaluating Census policies and processes promoting transparency

*Algorithmic Harm & Reparation in the Criminal Legal System | Collaboration from 2022 Algorithmic Reparation Workshop*

- Defining and taxonomizing algorithmic harm in the criminal legal system; proposing reparative measures within an Algorithmic Reparation framework grounded in international human rights law
- Two case studies: gunshot detection systems (ShotSpotter) & pretrial risk assessment tools (COMPAS)

**Yale African American Studies Dept.**

*Undergraduate Thesis*

2016 – 2017

*A Different Kind of Dark Energy: Placing Race and Gender in Physics | Advisor: Hazel Carby*

- Analyzing physical and astronomical theory through the lens of critical race theory and feminist theory in an effort to understand the effects of a racist-sexist society on scientific ways of knowing

**Harvard Center for Astrophysics & Yale Astronomy Dept.**

*Undergraduate Thesis*

2016 – 2017

*Understanding Gas-Phase Ammonia (NH<sub>3</sub>) Chemistry in Proto-Planetary Disks | Advisors: Karin Öberg & Hector Arce*

- Optimizing a numerical astrochemical model to investigate NH<sub>3</sub>/H<sub>2</sub>O ratios in proto-planetary disks

## PROFESSIONAL EXPERIENCE

**American Civil Liberties Union of Massachusetts, Boston, MA**

2021 – Present *Technology for Liberty Consultant*

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/](https://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](https://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 (FGS) flight software simulations
- Deputy Technical Lead for JWST Quicklook (observatory performance trending and analysis application)
  - Managing collaborative software development with [GitHub](#); designing web app in Python Django
- Developing Jupyter notebook tutorials with the Community Software Initiative

## HONORS & AWARDS

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2023 – Pres.	<b>National Science Foundation Graduate Research Fellowship</b>
2023 – Pres.	<b>Ford Foundation Predoctoral Fellowship</b>
2021 – Pres.	<b>Berkeley Fellowship</b> , <i>"awarded to outstanding applicants to doctoral programs in all fields"</i>
2020 – Pres.	<b>Harvard Berkman Klein Center for Internet &amp; Society</b> , Affiliate
2021 – 2022	<b>I School Graduate Scholar Program</b> , for <i>"leadership in diversity, equity, and inclusion"</i>
Nov. 2020	<b>Boston Bar Association President's Award</b> , for involvement in <i>CPCS vs. Chief Justice of the Trial Court</i> which advocated on behalf of incarcerated individuals in Massachusetts prisons & jails during COVID-19
Aug. 2018	<b>American Astronomical Society Education &amp; Professional Development Grant</b> Awardee, in support of the Know Your Power Project Workshop at the 2019 AAS Winter Conference
Apr. 2018	<b>STScl Team Achievement Award</b> , <i>"for organization of the workshop 'Concrete Steps to Make your Institution More Inclusive'"</i>
May 2017	<b>Phi Beta Kappa</b> , Alpha chapter of Connecticut
May 2017	<b>George Beckwith Prize</b> , <i>"to the undergraduate most proficient in some branch of astronomy."</i>
May 2017	<b>William Pickens Prize</b> , <i>"for an outstanding senior essay in the field of African American Studies."</i>
2015 – 2017	<b>Edward A. Bouchet-Robertson Fellowship</b> , <i>"to increase the number of minority students and others with a demonstrated commitment to eradicating racial disparities who will pursue PhDs"</i>
Jan. 2017	<b>Chambliss Outstanding Student Poster Presentation Award</b> , AAS Winter Conference 2017
Aug. 2015	<b>NASA Goddard John Mather Nobel Scholar</b>
2013	<b>National Achievement Scholar</b> ; <b>National Merit</b> Scholarship Finalist

## MENTORSHIP & COMMUNITY INVOLVEMENT

2022 – Pres.	<b>Berkeley I School Diversity, Equity, Inclusion, Belonging, and Justice Working Group</b> , Student Rep
2020 – Pres.	<b>Coding it Forward Civic Digital Fellowship</b> , Mentor <i>Advising undergraduate fellows on professionalism and the landscape of civic technology careers</i>
2021 – Pres.	<b>UC Berkeley I School PhD Applicant Feedback Program</b> , Co-Organizer <i>Coordinating current PhD students volunteering feedback on underrepresented PhD applicants' essays</i>
Oct. 2022	<b>Judge</b> , Berkeley InfoCamp 2022: "Tech-Ethics" Ideathon
Mar. 2022	<b>Palestine Trek Participant</b> , <i>political solidarity coalition of grad &amp; law students visiting the West Bank</i>
2021 – 2022	<b>"Effective Data Visualization" Workshop Organizer</b> , Boston University Spark! Lab ( <a href="#">slides</a> )
Oct. 2021	<b>"Dear Undergrad: Transition from Undergraduate to Graduate Student" Panelist</b> , Black in Physics <i>Sharing insights on choosing/starting a PhD program, as an ex-astrophysicist &amp; Black woman (<a href="#">recording</a>)</i>
2020 – 2021	<b>Police in Politics Project Advisor</b> , Boston University Spark! Lab <i>Advising data science projects around policing with Boston University students as ACLU representative</i>
Dec. 2020	<b>Mentoring Roundtable</b> , 2020 NeurIPS Women in Machine Learning Workshop <i>Advising early-career women in computer science about work within non-profit organizations</i>
Sep. 2020	<b>Mentoring Circle</b> , 2020 Virtual Grace Hopper Conference <i>Advising early-career women in tech on "How To Adult" (<a href="https://bit.ly/how-to-adult">bit.ly/how-to-adult</a>)</i>
May 2020	<b>Mentor</b> , MIT COVID-19 Virtual Datathon <i>Advising two teams on projects pursuing new research insights related to COVID-19, disparities, &amp; policy</i>
Nov. 2019	<b>"Drag v. AI" Workshop Organizer</b> , Boston Public Library <i>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.</i>
2018 – 2019	<b>"Know Your Power" Workshop Organizer</b> , 2019 Winter AAS Conference <i>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 <a href="#">astrobites</a></i>
Jan. 2019	<b>"Build a Website in 60 Minutes or Less" Workshop Facilitator</b> , 2019 Winter AAS Conference
Jan. 2019	<b>"Using Python for Astronomical Data Analysis" Workshop Facilitator</b> , 2019 Winter AAS Conference <i>Facilitating a workshop introducing participants to Astropy and affiliated Python packages</i>
2018 – 2019	<b>Diversity and Inclusion Working Group Member</b> , STScl Office of the Director
2018 – 2019	<b>Social Justice Reading Group Organizer</b> , STScl
2017 – 2019	<b>"Concrete Steps to Make Your Workplace More Inclusive" Workshop Organizer</b> , STScl <i>Workshop developing awareness of privilege; conducted in Fall 2017 and at the 231<sup>st</sup> AAS Conference</i>
2016 – 2017	<b>First-year Counselor</b> , Yale College Dean's Office <i>Competitive leadership role providing academic, professional, social, &amp; emotional support for first years</i>
2015 – 2016	<b>Science, Technology, and Research Scholars (STARS) Peer Mentor</b> , Yale College Dean's Office <i>Advising and mentoring underrepresented first years in STEM (gender &amp; racial minorities)</i>
2015 – 2017	<b>Yale Physics Department Climate &amp; Diversity Committee</b> , Undergraduate Representative
2014 – 2016	<b>Yale Undergraduate Aerospace Association</b> , <i>Designing &amp; constructing two telescopes and software</i>
2015 – 2017	<b>Yale Admissions STEM Likely Team</b> , <i>Advising prospective astrophysics students about STEM at Yale</i>
2015 – 2016	<b>Science Tour Guide</b> , Yale Admissions Office
2014 – 2016	<b>Yale Women in Physics Club</b> , Secretary
2014 – 2017	<b>Racial and Ethnic Openness Club</b> , <i>Undergraduate discussion group exploring multiracial identity</i>

## ADDITIONAL SKILLS

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### Software Development & Data Analysis:

- Python (including pandas, matplotlib, NumPy, Astropy, SciPy, PyQt, Django, scikit-learn, Jupyter notebooks; specific coursework in applied machine learning, astronomical research methods, and astrostatistics)
- R (including dplyr, ggplot, leaflet, shiny)
- git (GitHub & GitLab)
- Unix/Bash
- HTML, CSS, Javascript, Wordpress
- LabVIEW
- Scrum software development
- Continuous integration (Travis/Jenkins/GitLab CI)
- Server management with Apache
- Interactive data visualization with Plotly

### 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)

## PUBLICATIONS & PAPERS

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### Journal Articles

- "Engaging Diverse Publics in Algorithmic Development: Lessons Learned from the US Census' Implementation of Differential Privacy," Amina Abdu, **Lauren M. Chambers**, Abigail Jacobs, Deirdre Mulligan *[in prep]*
- "Should Reparations be Algorithmic?," Colin Doyle, Melissa Garcia Alvarez, Pelle Tracey, Gabriel Grill, **Lauren M. Chambers**, Cedric Whitney, Lydia X. Z. Brown, & Rachel Kuo, *Big Data & Society* (2023) *[in revision]*
- "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

### Conference and Workshop Papers

- "Engaging Diverse Publics in Algorithmic Development: Lessons Learned from the US Census' Implementation of Differential Privacy," Amina Abdu\*, **Lauren M. Chambers\***, Abigail Z. Jacobs, Deirdre K. Mulligan, *Privacy Law Scholars Conference* (June 2023) (\*equal contribution) *[accepted]*
- "The Limits of (Algorithmic) Transparency: Lessons Learned from the US Census' Implementation of Differential Privacy" Amina Abdu\*, **Lauren M. Chambers\***, Abigail Z. Jacobs, Deirdre K. Mulligan, *Data (Re)Makes the World* (March 2023) (\*equal contribution)

### Analytic Blogs & Reports

- "More Of The Same: Unpacking The 2022 Boston Police Budget," *Data For Justice*, May 6, 2021, [Blog](#).
- "A Mayor's Roadmap To Curb Boston Police Overtime," *Data For Justice*, April 14, 2021, [Blog](#).
- "How To Programmatically Create Dozens Of Wordpress Pages To Catalogue Thousands Of Documents," *Python In Plain English* and *Data For Justice*, March 11, 2021, [Blog](#).

- "Clearview, Cameras, And Karen: Newly Released Documents Expose Facial Recognition Technologies Used Across Massachusetts," *Data For Justice*, March 1, 2021, [Blog](#).
- "Data Show COVID-19 Out of Control Across MA Prisons & Jails," *Data for Justice*, December 22, 2020, [Blog](#).
- "Boston Police Department Court Overtime," *Data for Justice*, November 16, 2020, [Report](#).
- "Bias all the way down: Research shows domino effect when humans use face recognition algorithms," *Privacy SOS*, September 22, 2020, [Blog](#).
- "Wear a mask: Federal study finds COVID-19 masks fool face recognition," *Privacy SOS*, August 28, 2020, [Blog](#).
- "Break up with BRIC: Unpacking the Boston Regional Intelligence Ctr. budget," *Data for Justice*, July 22, 2020, [Blog](#).
- "Unpacking the Boston Police budget," *Data for Justice*, June 5, 2020, [Blog](#).
- "Internet deserts prevent remote learning during COVID-19," *Data for Justice*, May 13, 2020, [Blog](#).
- "Incarcerated and in danger: COVID-19 in Massachusetts prisons & jails," *Data for Justice*, April 15, 2020, [Blog](#).
- "Data show COVID-19 is hitting essential workers and people of color hardest," *Data for Justice*, April 7, 2020, [Blog](#).
- "Five fast facts from a federal study of demographic bias in facial recognition," *Privacy SOS*, February 3, 2020, [Blog](#).

## POSTERS & PRESENTATIONS

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### Tech Storytelling for Oppositionists and Others

- Keynote: May 2022, Code4Lib Conference ([recording](#))

### Banning Government Face Surveillance in Massachusetts

- Talk: Feb. 2022, Mechanism Design 4 Social Good (MD4SG) Algorithms, Law & Policy Working Group
- 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](#))

### 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

### **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, 233<sup>rd</sup> 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, 229<sup>th</sup> 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

## **P R O F E S S I O N A L   M E M B E R S H I P S**

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2022 – Pres.	Society for Social Studies of Science (4S)
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 (NSBP)
2016 – 2017	American Association for the Advancement of Science (AAAS)
2015 – 2017	American Physical Society (APS)