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RESEARCH INTERESTS

Galaxy formation & evolution, stellar feedback, reionization, 21-cm cosmology, first stars & black holes

EDUCATION

University of Colorado, Department of Astrophysical and Planetary Science (APS)	
PhD. Astrophysics	2015
M.S., Astrophysics	2011
Drake University, Department of Physics & Astronomy	
B.S. Physics, B.S. Astronomy	2009

RESEARCH POSITIONS

Research Scientist, Caltech	Oct 2025-
Senior NASA Postdoctoral Fellow, Jet Propulsion Laboratory	2022-2025
Research Associate, McGill University	2020-2022
CITA National Fellow, McGill University	2018-2020
Postdoctoral Scholar, University of California Los Angeles	2015-2018
Graduate Research Assistant, University of Colorado	2009-2015
Undergraduate Research Assistant, Cerro Tololo Inter-American Observatory REU	2009

HONORS & AWARDS

Senior NASA Postdoctoral Fellowship	2022-2025
CITA National Fellowship	2018-2020
University of Colorado Graduate School Fellowship	Summer 2015
AAS Rodger Doxsey Travel Prize (Honorable Mention)	225 th AAS Meeting, Jan. 2015
NASA Earth and Space Sciences Fellowship	2014-2015
NSF Graduate Research Fellowship (Honorable Mention)	2011

COLLABORATION INVOLVEMENT

The Spectro-Photometer for the History of the Universe, EoR, and Ices Explorer ([SPHEREx](#); NASA MIDEX)
Science Team Member

Hydrogen Epoch of Reionization Array ([HERA](#); NSF-funded interferometer)
Cross-Correlations Team Leader
Parameter Estimation and Modeling Team Member

PUBLICATION RECORD (FULL BIBLIOGRAPHY AT THE END)

Refereed Publications (last updated Feb. 20, 2025; see also [Google Scholar](#))

Total number of papers: 47

First author papers: 15

Significant contribution (2nd, 3rd, or corresponding author): 21

Other Publications

Author of [Chapter 2](#) in: “The cosmic 21-cm revolution: charting the first billion years of our Universe”

Author of [white paper](#) submitted to Astro2020 Decadal Survey

TEACHING EXPERIENCE

Classroom:

ASTR 2600: Computational Techniques (CU-Boulder)

Instructor of Record	Summer 2014
Instructor of Record	Spring 2014
Teaching Assistant (with Prof. Jason Glenn)	Fall 2013
Curriculum Development (with Prof. Jason Glenn)	Summer 2013

ASTR 4800: Space Science & Space Policy (CU-Boulder)

Teaching Assistant (with Prof. Jack Burns)	Fall 2011
Teaching Assistant (with Prof. Jack Burns)	Fall 2009

ASTR 001L: Introduction to Astronomy Lab (Drake University)

Teaching Assistant (with Prof. Charles Nelson)	Fall 2006 - Spring 2009
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Guest lectures: PHYS 644 (grad level Galaxies & Cosmology) at McGill (2x; 2019),
ASTR 2600 at CU (5x; 2014-2015), ASTR 4800 at CU (1x; 2009)

Workshops / summer schools:

“Codetober” at McGill, designed scientific computing with PYTHON lesson plan	Oct 2021
CHAMP Camp for HERA summer undergraduate students, intro to PYTHON lecture	June 2021
McGill PhysicsHackathon, designed cryptography challenge problem	Oct 2020
2 nd Mexican AstroCosmoStatistics School (University of Guanajuato), invited lecturer	May 8-12 2017
1 st Mexican AstroCosmoStatistics School (University of Guanajuato), invited lecturer	April 17-21 2016

TRAINING IN TEACHING

Certificate in College Teaching (Graduate Teacher Program at CU-Boulder)	Fall 2015
Requires attendance at 20 teaching workshops, two consultations following video-recording of teaching, and the assembly of a teaching portfolio.	

MENTORING EXPERIENCE (†AUTHORED OR CO-AUTHORED PUBLICATION)

Primary Mentor

Danielle Timm (UCLA undergrad; 2025 JIFRESSE)
Sean Lewis (Yale undergrad; 2024 JPL SURF)
Sylvia Chow (CSU Long Beach grad; 2024 JPL MSP)
Emma Klemets (McGill undergrad → UBC grad)
Felix Bilodeau-Chagnon (McGill undergrad)
†Henri Lamarre (McGill undergrad → UdeM grad)
Kristy Fu (UCLA undergrad → U. Manchester grad)
†Krishma Singal (Georgia Tech undergrad)
†Donald Trinh (UCI undergrad)
Jacob Jost (CU-Boulder undergrad)

Co-Mentor

Thomas McKinley (UCLA postbac → UCSF grad)
Ben Cheung (McGill undergrad)
†Joshua Hibbard (CU-Boulder grad)
Garett Lopez (UCLA undergrad → UCR grad)
†Rick Mebane (UCLA grad → UCSC postdoc)
†Guochao Sun (Caltech grad → Northwestern postdoc)
Scott Sullivan (CU-Boulder grad)

WORKSHOP ORGANIZATION

Reionisation in Relic Radiation, local organizing committee	July 2022
The 4 th Global 21-cm Workshop, scientific organizing committee	October 2021
Cross-Correlations with CHORD, co-organizer	October 2021
The 2 nd Global 21-cm Workshop, co-organizer	October 2019

GRANTS & COMPUTING RESOURCES SECURED

Co-I: Roman Research and Support Participation Opportunities (PI: Lidz)	2025-
PI: ACCESS Explore Allocation, "Mock Skies for the SPHEREx Galaxy Formation Investigation"	2024-
Co-I: NSF Astronomy & Astrophysics Grant (PI: La Plante)	2022
Co-I: NASA Astrophysics Theory Grant (PI: Furlanetto)	2022
Co-I: XSEDE <i>Bridges</i> ($\sim 0.1 - 0.2$ M SUs / year; Extreme Memory nodes)	2019-
Co-I: Compute Canada <i>Cedar</i> (~ 1.5 M core-hours / year)	2020-2022
Co-I: NASA <i>Pleiades</i> (~ 0.1 M core-hours)	2016-2019
Co-I: CU-Boulder <i>Janus</i> (~ 0.9 M core-hours)	2014
Co-I: CU-Boulder <i>Janus</i> (~ 0.7 M core-hours)	2012

PROFESSIONAL SERVICE

Referee for:

<i>MNRAS</i>	<i>PASA</i>	<i>Nature</i>
<i>MNRAS Letters</i>	<i>Astronomy & Astrophysics</i>	<i>Nature Astronomy</i>
<i>The Astronomical Journal</i>	<i>Physical Review Letters</i>	<i>New Astronomy Reviews</i>
<i>The Astrophysical Journal</i>	<i>Physical Review D</i>	<i>Philosophical Transactions</i>
<i>The Astrophysical Journal Letters</i>	<i>JCAP</i>	

Subject matter expert reviewer for:

NASA (3x)	European Research Council (1x)
National Science Foundation (2x)	Israel Science Foundation (1x)
Royal Astronomical Society (1x)	Dutch Research Council (1x)

DEPARTMENTAL SERVICE & ACTIVITY

Co-organizer for Low-Frequency Cosmology Journal Club, JPL	2023-2025
Co-organizer for Observational Cosmology Journal Club, Caltech	2022-2023
Organizer for astro-ph coffee discussions, McGill Space Institute	Summer 2022
CIFAR Gravity & Extreme Universe Annual Meeting, Postdoc Reporter	May 2022
Space Research Conference, McGill Bicentennial, "Future Telescopes" Moderator	May 2022
Seminar Committee, McGill Space Institute	2020-2022
Organizer for "random papers" discussion group, McGill Space Institute	2020-2022
Mentor for summer undergrad research program, McGill Space Institute	Summer 2019-2022
Judge for Summer Students' Final Presentation Symposium, McGill Space Institute	Summer 2021
Undergraduate Research Award Selection Committee, McGill Space Institute	Spring 2021
How to get a postdoc, discussion panel for UCLA graduate students	Spring 2018
Faculty Committee, student representative, CU-Boulder APS Department	2014-2015
Admissions Committee, student representative, CU-Boulder APS Department	Spring 2013
Exams Committee, student representative, CU-Boulder APS Department	Fall 2011
Observatory Committee, student representative, CU-Boulder APS Department	Fall 2009 - Fall 2010

OUTREACH & PRESS

Webinars

NASA Senior Living Community Outreach Program	February 2025
<i>Chemistry of the Early Universe</i> , NASA Science Briefing	December 2019

Articles that reference my work

<i>After cosmic dark ages, what burned away ubiquitous clouds of gas?</i>	September 2024
<i>The James Webb Space Telescope is finding too many early galaxies</i>	January 2023
<i>Bridges Simulations Uncover Shortcoming in Cosmological Models</i>	November 2021

Public Talks

<i>Astronomy on Tap (virtual)</i> , Lansing, MI	July 2021
<i>AstroNight at McGill</i> , Montréal, QC	March 2019
<i>Astronomy on Tap “fly-by”</i> , Vista, CA	April 2017
<i>Astronomy on Tap</i> , Los Angeles, CA	December 2016

Public Observing Nights

CU-Boulder APS Department ($\sim 1 - 2$ nights/semester)	Fall 2009 - Fall 2015
Drake Municipal Observatory ($\sim 1 - 2$ nights/month)	Fall 2006 - Fall 2009

Science Fairs

<i>Explore Your Universe</i> (UCLA), volunteer at “Ask a Scientist!” booth	Fall 2016
<i>Astronomy Day</i> (CU-Boulder), radio/microwave demo operator	Fall 2009 - Fall 2015

Planetarium Shows

Show for 3 rd graders at Lincoln Elementary (west LA) using mobile planetarium	February 2016
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DEPARTMENTAL COLLOQUIA & SEMINARS (*INVITED)

*University of Texas, Astronomy Colloquium	April 2025
* University of Illinois, Center for AstroPhysical Surveys Seminar	April 2025
Northwestern, Astrophysics Seminar	April 2025
University of Pennsylvania, Astrophysics Seminar	January 2025
UNLV, Astrophysics Seminar	October 2024
*NASA γ -ray Science Interest Group	September, 2024
Caltech, Observational Cosmology Seminar	March 2023
*University of Minnesota, Astrophysics Seminar	February 2023
*UC-Berkeley, Cosmology Seminar	January 2023
*Arizona State University, Cosmology Seminar (virtual)	August 2022
*Perimeter Institute Cosmology Seminar (virtual)	March 2022
*West Virginia University, Physics and Astronomy Colloquium (virtual)	January 2022
*Harvard CfA, Galaxies & Cosmology Seminar (virtual)	March 2021
*University of Melbourne, Astronomy Colloquium (virtual)	November 2020
Carnegie Observatories, Lunch Talk (virtual)	November 2020
UC-Davis, Astrophysics Seminar (virtual)	November 2020
*University of Arizona, EURECA Seminar (virtual)	April 2020
University of Zürich, Astrophysics Seminar	September 2019
CITA, Astrophysics Seminar	March 2019
McGill University, MSI Seminar	February 2019
UC-Santa Cruz, SCIPP Seminar	November 2018
*Stanford, Cosmology Seminar	November 2018
*University of Texas, Astronomy Colloquium	September 2018
*UCLA, Astronomy Colloquium	May 2018
Caltech, Tea Talk	November 2017
*UC-Berkeley, Cosmology Seminar	September 2017
UC-Santa Barbara, Astrophysics Lunch Talk	May 2017
Scuola Normale Superiore di Pisa, Astrophysics Seminar	January 2017
Imperial College London, Astrophysics Seminar	January 2017
*Michigan State University, Astrophysics Seminar	November 2016
UCLA, Astrophysics Journal Club	May, 2016
University of Colorado, JILA Astrophysics Seminar	January, 2014
University of Colorado, JILA Astrophysics Seminar	November, 2012

CONFERENCES & WORKSHOPS (*INVITED)

8 th Global 21-cm Signal Workshop, Caltech	September 2025
Line Intensity Mapping 2025, Annecy, France	June 2025
AAS 245, “Hyperwall Talk” on SPHEREx	January 2025
AAS 245, Session on “Surveys, Analysis, and Results III”	January 2025
*Line Intensity Mapping 2024 at UIUC, invited review on EoR	June 2024
Line Intensity Mapping 2024 at UIUC, contributed talk	June 2024
Aspen Center for Physics, Diffuse Backgrounds and the Low Surface Brightness Universe	April 2024
*AAS 243, presentation for Physics of the Cosmos Working Group	January 2024
AAS 243, Session on “Evolution of galaxies – first galaxies”	January 2024
*Reionization in the Summer, Heidelberg, Germany	June 2023
*AAS 241, Special Session: JWST Cosmic Evolution Early Release Science	January 2023
AAS 241, Session on “Intergalactic Medium at Radio and Millimeter Wavelengths”	January 2023
CMB/EoR Workshop at McGill, review on the status of 21-cm observations	July 2022
Canadian Institute for Advanced Research, Gravity & Extreme Universe Annual Meeting	May 2022
Reionization and Cosmic Dawn: Looking Forward to the Past (BCCP)	March 2022
*SAZERAC: The 21-cm signal, review on cross-correlations (virtual)	March 2022
SAZERAC Sip: Models & Simulations of Galaxies (virtual)	October 2021
*CMB S4 Workshop 2021, review on reionization (virtual)	August 2021
The 2 nd Global 21-cm Workshop	October 2020
*The Faint End of the High-z Galaxy UVLF Workshop	December 2018
*Interplay between particle and astro-particle physics, Cincinnati, OH	October 2018
*LHC Results Forum	May 2018
NASA Ames Research Center, Exploration Science Forum	June 2018
*KITP, Dark matter detection and detectability workshop	April 2018
Aspen Center for Physics, Cosmological Signals from Cosmic Dawn to the Present	February 2018
Dawn of Galaxies, Obergurgl, Austria	January 2017
NASA Ames Research Center, Exploration Science Forum	July, 2016
AAS 225, Dissertation Talk	January, 2015
International Union of Radio Science, Boulder	January, 2014
NASA Ames Research Center, NASA Lunar Science Institute Forum	July, 2012

PROFESSIONAL REFERENCES

1. Dr. Tzu-Ching Chang
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
tzu-ching.chang@jpl.nasa.gov or 626-298-5446

2. Prof. Adrian Liu
McGill University
3600 University Street
Montréal, Quebec, Canada H3A 2T8
acliu@physics.mcgill.ca or 514-716-0194

3. Prof. Steven Furlanetto
University of California Los Angeles
Box 951547, PAB 3-720
Los Angeles, CA 90095-1547
sfurlane@astro.ucla.edu or 310-206-4127

4. Prof. Jamie Bock (SPHEREx PI)
California Institute of Technology
The Division of Physics, Mathematics and Astronomy
1200 E California Blvd, Pasadena CA 91125
jjb@astro.caltech.edu or 626-395-2017

5. Prof. Jack Burns (thesis advisor)
Center for Astrophysics and Space Astronomy
University of Colorado Boulder - UCB 391
Boulder, CO 80309-0593
jack.burns@colorado.edu or 303-735-0963

6. Dr. Jason Glenn (re: teaching experience)
NASA / Goddard Spaceflight Center
Mail Code 665
Greenbelt, MD 20771
jason.glenn@nasa.gov or 301-286-4591

2025

47. “The SPHEREx Satellite Mission”
Bock, J. et al. (includes **Mirocha, J.**), to be submitted to *ApJ*
46. “First Results from HERA Phase II”
HERA Collaboration et al. (includes **Mirocha, J.**), submitted to *ApJ*
45. “Sensitivity of the Global 21-cm Signal to Dark Matter – Baryon Scattering”
[‡]Rahimieh, A., Parashari, P., An, R., [‡]Driskell, T., **Mirocha, J.**, Gluscevic, V., submitted to *Phys. Rev. D*
44. “Measuring NIR Extragalactic Background Light Anisotropies with CIBER. II”
Feder, R., Bock, J., Cheng, Y.-T., Korngut, P., Matsuura, S., **Mirocha, J.**, et al., submitted to *ApJ*
43. “A physically-motivated template set for high- z galaxy SED fitting”
[‡]Luberto, J., Furlanetto, S., **Mirocha, J.** et al., *JCAP* under review
42. “Constraining bursty star formation histories with the galaxy luminosity function and clustering”
Sun, G., Muñoz, J.B., **Mirocha, J.**, and Faucher-Giguère, C.A., *JCAP* accepted
41. “The relative constraining power of the high- z 21-cm dipole and monopole signals”
Mirocha, J., Anderson, C., Chang, T.C., Doré, O., Lidz, A., et al., *ApJ*, 983, 54
40. “LIMFAST. III. Timing Cosmic Reionization with the 21 cm and Near-Infrared Backgrounds”
Sun, G., Lidz, A., Chang, T.-C., **Mirocha, J.**, & Furlanetto, S.R., *ApJ*, 981, 92

2024

39. “21cmLSTM: A Memory-based Emulator of the Global 21-cm Signal with Unprecedented Accuracy”
[‡]Dorigo-Jones, J., Bahaudin, S.M., Rapetti, D., **Mirocha, J.**, and Burns, J., *ApJ*, 977, 19
38. “Reionization after JWST: a photon budget crisis?”
Muñoz, J.B. **Mirocha, J.**, Chisholm, J., Furlanetto, S.R., & Mason, C., *MNRAS Letters*, 535, L37
37. “Exploring the role of the halo mass function for inferring astrophysical parameters during reionization”
Greig, B., [‡]Prelogovic, D., **Mirocha, J.**, Qin, Y., Ting, Y.S., and Mesinger, A., *MNRAS*, 533, 2502
36. “Connecting 21-cm tomography to high-redshift galaxy mapping with machine learning”
[†]Kennedy, J., [†]Carr., J., [‡]Gagnon-Hartman, Liu, A., **Mirocha, J.** et al., *MNRAS*, 529, 3684

2023

35. “Validating posteriors obtained by an emulator when jointly-fitting the global 21-cm signal and high- z UVLF”
[‡]Dorigo-Jones, J., Rapetti, D., **Mirocha, J.**, [‡]Hibbard, J., Burns, J., and Bassett, N., *ApJ*, 959, 49
34. “Breaking degeneracies in the first galaxies with clustering”
Muñoz, J.B. **Mirocha, J.**, Furlanetto, S.R., Sabti, N., *MNRAS Letters*, 526L, L47
33. “On the expected purity of photometric galaxy surveys targeting the Cosmic Dawn”
Furlanetto, S. & **Mirocha, J.**, 2023, *MNRAS*, 523, 5274
32. “Seeking dark matter with γ -ray attenuation”
Bernal, J.L., Caputo, A., [‡]Sato-Polito, G., **Mirocha, J.**, & Kamionkowski, M., 2023, *Phys. Rev. D*, 107, 103046
31. “Improved Constraints on the 21 cm Power Spectrum with HERA Phase I Observations”
HERA Collaboration et al. (includes **Mirocha, J.**), 2023, *ApJ*, 945, 124
30. “Prospects for 21-cm – galaxy cross-correlations with HERA and the Roman High-Latitude Survey”
La Plante, P., **Mirocha, J.**, Gorce, A., Lidz, A., & Parsons, A., *ApJ*, 944, 59L
29. “Balancing the efficiency and stochasticity of star formation with dust in $z > 10$ galaxies observed by JWST”
Mirocha, J., & Furlanetto, S., 2023, *MNRAS*, 519, 843

2022

28. “Structure Formation and the Global 21-cm Signal with Coulomb-like Dark Matter”
[‡]Driskell, G., Nadler, E., **Mirocha, J.**, Benson, A., Boddy, K., Morton, T., [‡]Lashner, J., An, R. & Gluscevic, V., 2022, *Phys. Rev. D*, 106, 103525
27. “Signatures of reionization feedback in the near-infrared background”
Mirocha, J., Liu, A., and La Plante, P., 2022, *MNRAS*, 516, 4123
26. “A galaxy-free phenomenological model for the 21-cm power spectrum during reionization”
Mirocha, J., Muñoz, J.B., Furlanetto, S.R., Liu, A.C., & Mesinger, A., 2022, *MNRAS*, 514, 2010

25. “Constraining Warm Dark Matter and Pop III stars with the Global 21-cm Signal”
‡Hibbard, J., **Mirocha, J.**, Rapetti, D., †Basset, N., Tauscher, K., & Burns, J.O., 2022, *ApJ*, 929, 151
 24. “Bursty star formation during the Cosmic Dawn driven by delayed stellar feedback”
Furlanetto, S. & **Mirocha, J.**, 2022, *MNRAS*, 511, 3895
 23. “HERA Phase I Limits on the 21-cm Signal: Constraints on Astrophysics and Cosmology During the EoR”
HERA Collaboration et al. (**Mirocha, J.** led analysis in §6), 2022, *ApJ*, 924, 51
- 2021
22. “Revealing the formation histories of the first stars with the cosmic near-infrared background”
‡Sun, G., **Mirocha, J.**, Mebane, R., and Furlanetto, S.R., 2021, *MNRAS*, 508, 1954
 21. “Global 21-cm Absorption Signal from Superconducting Cosmic Strings”
†Thériault, R. **Mirocha, J.**, and Brandenberger, R., 2021, *JCAP*, 2021, 046
 20. “The importance of galaxy formation histories in models of reionization”
Mirocha, J., La Plante, P., & Liu, A., 2021, *MNRAS*, 507, 3872
 19. “Systematic uncertainties in models of cosmic dawn”
Mirocha, J., †Lamarre, H., & Liu, A., 2021, *MNRAS*, 504, 1555
 18. “A halo model approach for the 21-cm power spectrum during the cosmic dawn”
Schneider, A., Giri, S., & **Mirocha, J.**, 2021, *Phys. Rev. D*, 103, 3025
- 2020
17. “Prospects for distinguishing galaxy evolution models with surveys at redshifts $z \gtrsim 4$ ”
Mirocha, J., 2020, *MNRAS*, 499, 4534
 16. “Effects of self-consistent rest-ultraviolet colours in semi-empirical galaxy formation models”
Mirocha, J., Mason, C.M., Stark, D.P., 2020, *MNRAS*, 498, 2645
 15. “Global 21-cm signal extraction from foreground and instrumental effects. II. Efficient and Self-Consistent...”
Rapetti, D., ‡Tauscher, K., **Mirocha, J.**, and Burns, J.O., 2020, *ApJ*, 897, 174
 14. “High-mass X-ray binaries in nearby metal-poor galaxies: on the contribution to nebular HeII emission”
‡Senchyna, P., Stark, D.P., **Mirocha, J.**, Reines, A., Charlot, S., Jones, T., & Mulchaey, J., 2020, *MNRAS* 494, 941
 13. “The Effects of Population III X-ray and Radio Backgrounds on the Cosmological 21-cm Signal”
‡Mebane, R., **Mirocha, J.**, & Furlanetto, S.R., 2020, *MNRAS*, 493, 1217
- 2016-2019
12. “What does the first highly-redshifted 21-cm detection tell us about early galaxies?”
Mirocha, J., Furlanetto, S.R., 2019, *MNRAS*, 483, 1980
 11. “The Persistence of Population III Star Formation”
‡Mebane, R., **Mirocha, J.**, & Furlanetto, S.R., 2018, *MNRAS*, 479, 4544
 10. “Unique Signatures of Population III in the Global 21-cm Signal”
Mirocha, J., ‡Mebane, R., Furlanetto, S.R., †Singal, K., †Trinh, D., 2018, *MNRAS*, 478, 5604
 9. “A Minimalist Feedback-Regulated Model for Galaxy Formation During the EoR”
Furlanetto, S.R., **Mirocha, J.**, ‡Mebane, R., ‡Sun, G., 2017, *MNRAS*, 472, 1576
 8. “A Space-Based Observational Strategy for Characterizing the First Stars and Galaxies...”
Burns, J.O., Bradley, R., ‡Tauscher, K., Furlanetto, S.R., **Mirocha, J.**, et al., 2017, *ApJ*, 844, 1
 7. “The Global 21-cm Signal in the Context of the High- z Galaxy Luminosity Function”
Mirocha, J., Furlanetto, S.R., ‡Sun, G., 2017, *MNRAS*, 464, 1365
 6. “Parametrizations of the 21-cm global signal and parameter estimation from single-dipole experiments”
Harker, G.J.A., **Mirocha, J.**, Burns, J.O., Pritchard, J.R., 2016, *MNRAS*, 455, 3829
- 2012-2015
5. “Interpreting the Global 21-cm Signal from High Redshifts. II. Parameter Estimation”
Mirocha, J., Harker, G.J.A., Burns, J.O., 2015, *ApJ*, 813, 11
 4. “Decoding the X-ray Properties of Pre-Reionization Era Sources”
Mirocha, J., 2014, *MNRAS*, 443, 1211
 3. “Interpreting the Global 21-cm Signal from High Redshifts. I. Model-Independent Constraints”
Mirocha, J., Harker, G.J.A., Burns, J.O., 2013, *ApJ*, 777, 118

2. [“The Lick-index Calibration of the Gemini Multi-Object Spectrographs”](#)
Puzia, T.H., Miller, B.W., Tranco, G., Basarab, B., **Mirocha, J.**, Butler, K., 2013, *AJ*, 145, 164
1. [“Optimized Multi-Frequency Spectra for Applications in Radiative Feedback and Reionization”](#)
Mirocha, J., Skory, S., Burns, J.O., Wise, J.W., 2012, *ApJ*, 756, 94

BOOK CONTRIBUTIONS AND REPORTS

2. [“Astrophysics from the 21-cm line”](#)
Mirocha, J., chapter 2 in “The cosmic 21-cm revolution: charting the first billion years of our Universe”
Ed. Andrei Mesinger (Bristol: IOP Publishing Ltd), AAS-IOP ebooks, Dec. 2019
1. [“Farside Array for Radio Science Investigations of the Dark ages and Exoplanets \(FARSIDE\)”](#)
Burns, J.O., Hallinan, G., ..., **Mirocha, J.**, NASA Probe final study report, Nov. 2019

WHITE PAPERS

10. [“Opportunities for galaxy – 21-cm cross-correlations at high redshifts”](#)
Mirocha, J., La Plante, P. et al., 2023, submitted to the Roman core community surveys call for input
9. [“Canada and the SKA from 2020-2030 ”](#)
Spekkens, K., Chiang, C., ..., **Mirocha, J.**, et al., submitted to the Canadian Long-Range Plan
8. [“A Roadmap for Astrophysics and Cosmology with High-Redshift 21 cm Intensity Mapping”](#)
HERA Collaboration et al. (includes **Mirocha, J.**), submitted as a APC White Paper for Astro2020
7. [“First Stars and Black Holes at Cosmic Dawn with Redshifted 21-cm Observations”](#)
Mirocha, J., Jacobs, D., Dillon, J., et al., submitted to the Astro-2020 Decadal Survey
6. [“Synergies Between Galaxy Surveys and Reionization Measurements”](#)
Furlanetto, S., Beardsley, A., Carilli, C., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey
5. [“Insights Into the Epoch of Reionization with the Highly-Redshifted 21-cm Line”](#)
Furlanetto, S., Carilli, C., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey
4. [“Cosmology with the Highly Redshifted 21cm Line ”](#)
Liu, A., Aguirre, J., ..., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey
3. [“Fundamental Cosmology in the Dark Ages with 21-cm Line Fluctuations”](#)
Furlanetto, S., Bowman, J., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey
2. [“Cosmic Dawn and Reionization: Astrophysics in the Final Frontier”](#)
Cooray, A., Aguirre, J., ..., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey
1. [“Mapping Cosmic Dawn and Reionization: Challenges and Synergies”](#)
Alvarez, M., Fialkov, A. La Plante, P., ..., **Mirocha, J.**, et al., submitted to the Astro-2020 Decadal Survey