

# CURRICULUM VITAE

## RYAN P KEENAN

### CONTACT INFORMATION

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### CURRENT POSITION

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2023-Present    MAX PLANCK INSTITUTE FOR ASTRONOMY  
Postdoctoral Researcher

### EDUCATION

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2017-2023    UNIVERSITY OF ARIZONA  
Ph.D., Astronomy and Astrophysics (2023)  
Advisor: Dan Marrone — Thesis: Tools for Measuring the Cosmic History of Molecular Gas  
M.S., Astronomy and Astrophysics (2020)  
2013-2017    UNIVERSITY OF MICHIGAN  
B.S., Applied Mathematics, Astronomy and Astrophysics, Physics (2017)  
Advisor: Sally Oey — Thesis: Lyman Continuum Escape From Haro 11

### FELLOWSHIPS, AWARDS, AND HONORS

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2021            University of Arizona Departmental Graduate Student Award for Excellence in Service  
2019-2023    National Science Foundation Graduate Research Fellowship  
2017            University of Michigan Departmental Award for Best Senior Thesis in Astronomy  
2014-2017    College Honors, University of Michigan  
2013-2017    Stamps Leadership Scholar  
2016            Honors Travel Grant for thesis-related work  
2016            Sigma Pi Sigma Honors Society Inductee  
2013            Energy Solutions Scholarship Recipient

### TELESCOPE TIME OBTAINED AS PRIMARY INVESTIGATOR

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**LMT/23S1**            “Searching for Exotic Gas to Dust Ratios in the Nearby Universe”  
Awarded Time: 5 hours (A Rank)  
**IRAM 30m/22Delta**    “When is CO(2-1) a Total Molecular Gas Tracer?”  
Awarded Time: 32 hours (A Rank)  
**NOEMA/22W**            “Exploring a CO-selected Galaxy with No Optical/IR Counterpart at  $z=2.3$ ”  
Awarded Time: 3 hours (B Rank)  
**MMT/20A**            “Star formation in the largest molecular gas reservoirs at  $z \sim 2$ ”  
Awarded time: 1.5 nights  
**Bok 2m/20A**            “A measurement of molecular gas in normal star forming galaxies during the peak of  
cosmic star formation”  
Awarded time: 4 nights, program not observed due to COVID-19

*Refereed First Author Publications*

5. “AMISS II: Variations in the CO(2-1)/CO(1-0) Line Ratio Across the Nearby Galaxy Population”, **R. P. Keenan**, D. P. Marrone, G. K. Keating & E. C. Mayer 2023, in preparation
4. “The Arizona Molecular ISM Survey with the SMT: Survey Overview and Public Data Release”, **R. P. Keenan**, D. P. Marrone, G. K. Keating, E. C. Mayer, K. Bays, J. Downey, L. C. Dunn, J. C. Flores, T. W. Folkers, D. C. Forbes, B. C. Guvenen, C. Holmstedt, R. M. Moulton, & P. Sullivan 2023, *The Astrophysical Journal*, in review
3. “An Intensity Mapping Constraint on the CO-Galaxy Cross Power Spectrum at Redshift  $\sim 3$ ”, **R. P. Keenan**, G. K. Keating & D. P. Marrone 2022, *The Astrophysical Journal*, 927, 161
2. “Biases and Cosmic Variance in Molecular Gas Abundance Measurements at High Redshift”, **R. P. Keenan**, D. P. Marrone, & G. K. Keating 2020, *The Astrophysical Journal*, 904, 127
1. “Haro 11: Where is the Lyman Continuum Source?”, **R. P. Keenan**, M. S. Oey, A. E. Jaskot, & B. L. James 2017, *The Astrophysical Journal*, 848, 12

*Refereed Collaborator Authored Publications*

4. “Absorber Design and Optimization of Kinetic Inductance Detectors for the Terahertz Intensity Mapper”, R. Nie, R. M. J. Janssen, C. M. Bradford, J. P. Filippini, S. Hailey-Dunsheath, C. M. McKenney, J. E. Aguirre, J. S. Bracks, A. J. Corso, J. Fu, C. Groppi, J. Hoh, **R. P. Keenan**, L.-J. Liu, I. N. Lowe, D. P. Marrone, P. Mauskopf, J. Redford, I. Trumper, & J. D. Vieira 2022, *Journal of Low Temperature Physics*
3. “Probing Cosmic Reionization and Molecular Gas Growth with TIME”, G. Sun, T.-C. Chang, B. D. Uzgil, J. Bok, C. M. Bradford, V. Butler, C.-C. Tessalie, Y.-T. Cheng, A. Cooray, A. T. Crites, S. Hailey-Dunsheath, N. Emerson, F. Clifford, B. L. Hoscheit, J. R. Hunacek, **R. P. Keenan**, C.-T. Li, P. Madonia, D. P. Marrone, L. Monceli, C. Shiu, I. Trumper, A. Turner, A. Weber, T.-S. Wei, & M. Zemcov 2020, *The Astrophysical Journal*, 915, 33
2. “An Intensity Mapping Detection of Aggregate CO Line Emission at 3 mm”, G. K. Keating, D. P. Marrone, G. C. Bower, & **R. P. Keenan** 2020, *The Astrophysical Journal*, 901, 141
1. “Mapping Lyman Continuum Escape in Tololo 1247-232”, G. Micheva, M. S. Oey, **R. P. Keenan**, A. E. Jaskot, & B. L. James 2018, *The Astrophysical Journal*, 867, 1

*Technical Memos, White Papers, Etc.*

5. “ARO Memo: The Beam Size of the ARO Receivers”, **R. P. Keenan** July 2023
4. “ARO Memo: The Focus of the Submillimeter Telescope”, **R. P. Keenan** March 2022
3. “ARO Memo: The Focus of the 12M ALMA Prototype Antenna”, **R. P. Keenan** March 2022
2. “Multi-Tracer Studies of Nearby Galaxies with the wSMA”, E. Koch, G. K. Keating, J. den Brok, J. Forbrich, M. J. Jiménez-Donaire, C. J. Lada, M. Ashby, F. Bigiel, I.-D. Chiang, C. Faesi, **R. P. Keenan**, A. Leroy, G. Petitpas, E. Rosolowsky, K. Sandstrom, E. Schinnerer, A. Usero, & D. Wilner 2022, *CfA Internal White Paper*
1. “Line Intensity Mapping with the Greenland Telescope”, G. K. Keating, E. Bellini, G. Bower, A. Crites, M. Dierickx, A. Moradinezhad Dizgah, P. Grimes, K. Karkare, **R. P. Keenan**, D. P. Marrone, T. Norton, N. Patel, R. Srinivasan 2022, *CfA Internal White Paper*

## TALKS AND POSTERS

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### *Research Talks and Posters*

16. 241st Meeting of the American Astronomical Society, Seattle, Washington, USA, January 2023: “AMISS: Understanding CO(2-1) as a Molecular Gas Tracer” (talk)
15. Seminar at the Max Planck Institute for Extraterrestrial Physics, Garching, Germany, December 2022: “Tools for Measuring the Cosmic History of Molecular Gas” (invited talk)
14. CalTech Astro Tea Talk, Pasadena, California, USA, November 2022: “Tools for Measuring the Cosmic History of Molecular Gas” (talk)
13. Cornell Galaxy Lunch, Ithaca, New York, USA, October 2022: “Tools for Measuring the Cosmic History of Molecular Gas” (talk)
12. SMA Seminar at Harvard & Smithsonian Center for Astrophysics, Cambridge, Massachusetts, USA, September 2022: “The AMISS Survey: Understanding CO(2-1) as a Molecular Gas Tracer” (talk)
11. Special Colloquium at Max Planck Institute for Radio Astronomy, Bonn, Germany, September 2022 “The AMISS Survey: Understanding CO(2-1) as a Molecular Gas Tracer” (talk)
10. XXXIst General Assembly of the IAU, Busan, Korea, August 2022: “Tools for Measuring the Cosmic History of Molecular Gas” (talk)
9. XXXIst General Assembly of the IAU, Busan, Korea, August 2022: “From CO Emission to Molecular Gas: How Excitation of CO Impacts the Sub/millimeter Observational Frontier” (poster)
8. SMA Seminar at Harvard & Smithsonian Center for Astrophysics, Cambridge, Massachusetts, USA, February 2022: “Tools for Measuring the Cosmic Molecular Gas History” (talk)
7. Steward Observatory Early Career Scientist Talk, Tucson, Arizona, USA, October 2021: “A Constraint on the CO-Galaxy Cross Power Spectrum at Redshift 3” (talk)
6. UChicago/KICP Line Intensity Mapping Workshop, July 2021: “A Constraint on the CO-Galaxy Cross Power Spectrum at Redshift 3” (talk)
5. UChicago/KICP Line Intensity Mapping Workshop, July 2021: “IMSim: An Intensity Mapping Simulation Pipeline” (talk)
4. Max Planck Institute for Astronomy Galaxy Coffee, Heidelberg, Germany, October 2020: “Quantifying Effects of Cosmic Variance on our Understanding of the Cosmic Abundance of Molecular Gas” (talk)
3. NOIRLab Friday Lunch Astronomy Seminar Hour, Tucson, Arizona, USA, October 2020: “Quantifying Effects of Cosmic Variance and Measurement Bias on our Understanding of the Cosmic Abundance of Molecular Gas” (talk)
2. Lines in the Large Scale Structure, Marseille, France, July 2019: “Simulating Future Intensity Mapping Fields” (talk)
1. 229th Meeting of the American Astronomical Society, Grapevine, Texas, USA, January 2017: “Haro 11: Where is the Lyman Continuum Source?” (poster)

### *Outreach-Related Talks*

2. Tucson Area Physics Teachers Breakfast, Tucson, Arizona, USA, October 2020: “Mentorship and Education in SCIENCE for Tucson” (talk, given with I. Shivaiei and E. Schlawin)
1. NOAO Friday Lunch Astronomy Seminar Hour, Tucson, Arizona, USA, December 2019: “Mentorship and Education in SCIENCE for Tucson” (talk, given with I. Shivaiei and E. Schlawin)

## LEADERSHIP IN DIVERSITY, EQUITY AND INCLUSION

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2022-2023	Advisor for Mentorship and Education in SCIENCE for Tucson (MESCIT)
2022	Mentor for Arizona's Science, Engineering, and Math Scholars Program (ASEMS)
2020-2021	Graduate Student Representative, Steward Observatory Diversity, Equity and Inclusion Initiative Task Force on Mentorship
2020	Coordinator for Tucson Initiative for Minority Engagement in Science and TEchnology Program (TIMESTEP) Summer Internship
2018-2022	Coordinator for Mentorship and Education in SCIENCE for Tucson (MESCIT)
2014-2019	Research/Writing Coach at Stegner Young Writing Scholar's Institute

## TEACHING

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2021 Spring	University of Arizona, ASTR302 Introduction to Observational Astronomy, Teaching Assistant
2020 Fall	University of Arizona, ASTR300A Dynamics in Astrophysics, Teaching Assistant
2017 Spring	University of Michigan, ASTRO 104 Alien Skies: A Tour Through the Universe, Grader
2016 Fall	University of Michigan, PHYSICS 453 Quantum Mechanics, Grader
2016 Spring	University of Michigan, PHYSICS 140 General Physics I, Learning Assistant
2015 Fall	University of Michigan, PHYSICS 140 General Physics I, Learning Assistant