

## Curriculum Vitae of Tobias Marriage

Professor  
Department of Physics and Astronomy  
Johns Hopkins University  
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3400 N. Charles St.  
Baltimore, MD 21218  
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RESEARCH: Inflation, Reionization, Galaxy Clusters, Galaxy Evolution,  
Radio and Star Forming Galaxies, Cosmic Microwave Background,  
Sunyaev-Zel'dovich Effect, Instrumentation and Survey Operation

EDUCATION: 2001-2006 PhD Physics, Princeton University  
2000-2001 Part III of the Mathematical Tripos, University of Cambridge  
1996-2000 A.B. Physics, Princeton University

APPOINTMENTS: 2021- Professor, Johns Hopkins  
2017-2021 Associate Professor, Johns Hopkins University  
2010-2017 Assistant Professor, Johns Hopkins University  
2006-2010 Postdoctoral Researcher, Astrophysics, Princeton University

COLLABORATIONS: 2015- ISSI International Team: SZ Clusters in the Planck Era  
2010- Cosmology Large Scale Angular Surveyor (CLASS; Co-PI)  
2008-2012 Atacama B-mode Search (ABS)  
2003- Atacama Cosmology Telescope (ACT; PhD)  
1998-2003 Millimeter INTerferometer (MINT; UG Thesis, PhD)

PROFESSIONAL SERVICE: 2011- NSF Proposal Reviewer for Astronomy & Polar Programs  
2011- Referee for ApJ, MNRAS, PRL, JCAP & IEEE

TEACHING: 2019- General Physics I for Biological Science Majors  
2016-2017 Graduate Radiative Astrophysics  
2015 Nominee, Johns Hopkins Excellence in Teaching Award  
2012-2014 Undergraduate Thermal Physics  
2011 Graduate Extragalactic Astronomy  
2011-2018 Undergraduate Advanced Laboratory

RESEARCH MENTORSHIP: Postdoc: J. W. Appel, S. M. Bruno, J. Couto, R. Datta, J. Eimer,  
T. Essinger-Hileman, M. Gralla, I. Padilla, L. Parker, D. Watts  
PhD: Y. Y. Chan, J. Cleary, D. Crichton ('17), K. Harrington ('18),  
J. Iuliano ('20), Y. Li, C. Morales, C. Nuñez, M. Petroff ('21),  
R. Shi, T. Su ('17), D. Watts ('18)  
PhD (Co): A. Ali ('17), S. Dahal ('20), K. Fogarty ('17), D. Gothe ('15),  
K. Hall ('20), K. Osumi ('21), Z. Xu ('17)  
Undergrad: 19 Senior Thesis Projects

GRANTS AND FELLOWSHIPS: 2021-2023 Co-PI, NSF ATI Grant, "Advancing Technologies for Measuring  
the Largest Angular Scale CMB",  
\$1,096,498  
2020-2023 Co-PI, NSF MSIP Grant, "Large Angular Scale Polarization  
Survey of the Cosmic Microwave Background - Phase Two",

		\$3,593,744
	2017-2023	PI, NSF CAREER Award, “Cosmology with CLASS”, \$572,493
	2016-2022	Co-PI, NSF MSIP Grant, “Large Angular Scale Polarization Survey of the Cosmic Microwave Background”, \$4,433,000
	2016-2017	Johns Hopkins Catalyst Award, “Verifying and Characterizing Inflation Using the Next Generation of CMB Data”, \$64,000
	2016-2017	PI, Space@Hopkins Seed Grant, “3D-Printing of Millimeter Wave Optics for Space Applications”, \$25,000
	2016-2018	Co-PI, NASA Grant, “High Efficiency Feedhorn-Coupled TES-based Detectors for CMB Polarization Measurements”, \$204,129
	2015-2017	PI, Private Gift, “Development of Astronomical Applications of Novel AlSi Alloy”, \$55,000
	2014-2018	Co-PI, NASA Grant, “Feedhorn-coupled Focal Planes for Space-based CMB Polarimetry”, \$340,700
	2014-2018	Sponsoring-PI, NASA Space Technology Research Fellowship, PhD Advisee K. Harrington, “Polarized Microwave Background Technologies for Inflationary Gravitational Wave Detection”, \$288,000
	2014-2017	Co-PI, NSF Grant, “MRI: Development of a Sensitive Broadband Dual-Frequency Millimeter-Wavelength Polarimeter”, \$2,030,147
	2005-2006	Harold W. Dodd Graduate Fellowship
	2000-2003	NSF Graduate Research Fellowship
PUBLIC OUTREACH:	2019	<u>NPR All Things Considered</u> (hyperlinked)
	2014-	Press Releases: <u>Evidence for Quasar Feedback with SZ Effect</u> (hyperlinked) <u>The SZ Effect in Radio Loud AGN</u> (hyperlinked)
	2014-	<u>CLASS Public Website and Press</u> (hyperlinked)
	2010-	Exhibitor JHU Physics Fair
JOHNS HOPKINS DEPARTMENT & SCHOOL SERVICE:	2021-	Chair, Graduate Admissions Committee
	2017-2019	Chair, Apache Point Time Allocation Committee
	2015-	Chair, Dept Recruitment Committee
	2014-	Faculty Head, KSAS Physical Sciences Machine Shop
	2013-	Radiation Officer, Dept Safety Committee
	2011-2013	Dept Strategic Planning Committee
	2010-	Dept Undergraduate Program Committee
	2010-	Dept Recruitment Committee

INVITED TALKS:

48. *The Cosmology Large Angular Scale Surveyor*, Harvard University, DFK Cosmology Journal Club, June 2020.
47. *The Cosmology Large Angular Scale Surveyor*, Smithsonian Astrophysical Observatory, Receiver Lab Lunch Talk, June 2020.
46. *The Cosmology Large Angular Scale Surveyor*, University of Chicago, KICP Colloquium, Mar 2020
45. *Cosmology and Technology with the Cosmic Microwave Background*, United Arab Emirates University, Jan 2019
44. *Cosmology and Technology with the Cosmic Microwave Background*, NYU Abu Dhabi, Jan 2019
43. *The Cosmology Large Angular Scale Surveyor*, CMB Foregrounds for B-mode Studies (Tenerife, Spain), Oct 2018
42. *The Cosmology Large Angular Scale Surveyor*, Cosmo Andes 2018 (Pontificia Universidad Catolica de Chile), Jan 2018
41. *Lyman's DIY Universe*, LP@60: a symposium to celebrate the 60th Birthday of Lyman A. Page, Jr. His life, science, and collaborations (Princeton), Jan 2018
40. *Constraining Inflation and Neutrino Mass with CLASS*, 38th International Conference on High Energy Physics (Chicago), Aug 2016.
39. *Probing Inflation, Reionization, and Neutrinos with CLASS*, Special Session of the 228th AAS Meeting (San Diego), The Polarization of the Cosmic Microwave Background: Current Status and Future Prospects, Jun 2016.
38. *Probing AGN Feedback with the SZ Effect*, Space Telescope Science Institute, Hot Sci Seminar, Apr 2016.
37. *Panel: Space, Balloon, Ground Complementarity*, LBNL-2016: Cosmology with CMB-S4 (Lawrence Berkeley National Laboratory), Mar 2016
36. *Probing AGN Feedback with the SZ Effect*, Pontificia Universidad Catolica de Chile, Astronomy Seminar, Nov 2015.
35. *Panel: Measuring CMB Anisotropies*, CMB@50 (Princeton), Jun 2015.
34. *Double Feature: SZ and AGN & CLASS*, University of Toronto, Dunlap Seminar, Feb 2015
33. *Double Feature: SZ and AGN & CLASS*, University of Chicago, KICP Seminar, Feb 2015
32. *The Cosmic Microwave Background: An Update and Outlook*, US Naval Observatory, Astronomy Seminar, Jun 2014
31. *The Cosmic Microwave Background: An Update and Outlook*, Johns Hopkins University, CAS Seminar, May 2014
30. *ACT on S82: From Inflation to Structure Formation*, The Multi-Wavelength, Multi-Epoch Heritage of Stripe 82 (Princeton University), Mar 2014.
29. *CMB Fever*, The Future of Particle Physics (New York University), Sep 2013.
28. *The Cosmology Large Angular Scale Surveyor*, Cosmology After Planck Workshop (University of Michigan), Sep 2013.
27. *The Cosmology Large Angular Scale Surveyor*, CMB2013 (OIST, Okinawa), Jun 2013.
26. *The Cosmology Large Angular Scale Surveyor*, Cosmology in the Planck Era (Princeton), Jun 2013.
25. *The Atacama Cosmology Telescope Sunyaev-Zel'dovich Galaxy Cluster Survey*, The Universe as seen by Planck (ESA/ESTEC, Noordwijk), Apr 2013.
24. *ACT: the detection of galaxy clusters and the determination of their physical properties*, The Mass Profiles of Galaxy Clusters from the Core to the Outskirts (Madonna di Campiglio), Mar 2013.
23. *Science from the Atacama Cosmology Telescope*, Pontificia Universidad Catolica de Chile, Astronomy Seminar, Jan 2013.
22. *Science from the Atacama Cosmology Telescope*, Workshop 2013 Polarization of the Cosmic

- Microwave Background (University of Chile), Jan 2013.
21. *The Atacama Cosmology Telescope: Update on Sunyaev-Zel'dovich Cluster Work*, NASA Goddard SFC, GUN Seminar, Jun 2012.
  20. *Latest Results from the Atacama Cosmology Telescope*, APS April Meeting (Atlanta), Apr 2012.
  19. *Latest Results from the Atacama Cosmology Telescope*, Carnegie Mellon University, Astro Seminar, Feb 2012.
  18. *Latest Results from the Atacama Cosmology Telescope*, Space Telescope Science Institute, Cool Sci Seminar, Jan 2012.
  17. *ACT Results from the Observation of Galaxy Clusters*, SZX Huntsville 2011: Cosmology with X-ray and Sunyaev-Zeldovich Effect Observations of Galaxy Clusters (University of Alabama, Huntsville), Sep 2011.
  16. *The Atacama Cosmology Telescope: Sunyaev-Zeldovich Cluster Results*, Monsters Inc.: Astrophysics and Cosmology with Galaxy Clusters (KITP, UC Santa Barbara), Mar 2011.
  15. *The Atacama Cosmology Telescope: Sunyaev-Zeldovich Cluster Results*, Johns Hopkins University, Physics and Astronomy Colloquium, Mar 2011.
  14. *ACT SZ Observations*, Planck Conference: The Millimeter and Submillimeter Sky in the Planck Mission Era (Paris), Jan 2011.
  13. *ACT SZ*, Massachusetts Institute of Technology, Astrophysics Colloquium, Nov 2010.
  12. *ACT SZ*, Institute for Advanced Studies, Astrophysics Informal Seminar, Oct 2010.
  11. *Atacama Cosmology Telescope Results on Clusters*, Galaxy Clusters: Observations, Physics, and Cosmology (MPA, Garching), Jul 2010.
  10. *The Atacama Cosmology Telescope: First Results*, Columbia University, Special Seminar, Apr 2010.
  9. *The Atacama Cosmology Telescope: First Results*, Johns Hopkins University, CAS Seminar, Mar 2010.
  8. *The Atacama Cosmology Telescope: First Results*, University of Pittsburgh, Astrophysics Seminar, Jan 2010.
  7. *The Atacama Cosmology Telescope*, Rutgers University, Astrophysics Seminar, Dec 2009.
  6. *The Atacama Cosmology Telescope*, Columbia University, ISCAP Seminar, Nov 2009.
  5. *The Atacama Cosmology Telescope*, Harvard University, ITC Seminar, Nov 2009.
  4. *The Atacama Cosmology Telescope*, UC Berkeley: Special Seminar, Oct 2009.
  3. *The Atacama Cosmology Telescope*, Stanford University, KIPAC Seminar, Oct 2009.
  2. *ACT SZ*, The Warm and Hot Universe (Columbia University), May 2007.
  1. *The Next Generation of CMB Observatories*, Yale University, Astronomy Colloquium, Jan 2007.

#### PUBLICATIONS:

The names of my advisees (PhD students and postdocs, past and present) are underlined. The publication titles are hyperlinked.

- [97] [Rui Shi](#), **Tobias A. Marriage**, [John W. Appel](#), Charles L. Bennett, David T. Chuss, [Joseph Cleary](#), [Joseph Eimer](#), Sumit Dahal, [Rahul Datta](#), Francisco Espinoza, [Yunyang Li](#), Nathan J. Miller, [Carolina Núñez](#), [Ivan L. Padilla](#), [Matthew A. Petroff](#), Deniz A. N. Valle, Edward J. Wollack, and Zhilei Xu. Testing CMB Anomalies in E-mode Polarization with Current and Future Data. *arXiv e-prints*, page arXiv:2206.05920, June 2022.
- [96] [John W. Appel](#), Charles L. Bennett, Michael K. Brewer, Ricardo Bustos, [Manwei Chan](#), David T. Chuss, [Joseph Cleary](#), [Jullianna D. Couto](#), Sumit Dahal, [Rahul Datta](#), Kevin Denis, [Joseph Eimer](#), [Thomas Essinger-Hileman](#), [Kathleen Harrington](#), [Jeffrey Iuliano](#), [Yunyang Li](#), **Tobias**

- A. Marriage**, [Carolina Núñez](#), Keisuke Osumi, [Ivan L. Padilla](#), [Matthew A. Petroff](#), Karwan Rostem, Deniz A. N. Valle, [Duncan J. Watts](#), Janet L. Weiland, Edward J. Wollack, and Zhilei Xu. Calibration of Transition-edge Sensor (TES) Bolometer Arrays with Application to CLASS. *ApJS*, 262(2):52, October 2022.
- [95] [Joseph Cleary](#), [Rahul Datta](#), [John W. Appel](#), Charles L. Bennet, David T. Chuss, [Jullianna Denes Couto](#), Sumit Dahal, Francisco Espinoza, Thomas [Essinger-Hileman](#), [Kathleen Harrington](#), [Jeffery Iuliano](#), [Yunyang Li](#), **Tobias A. Marriage**, [Carolina Núñez](#), [Matthew A. Petroff](#), Rodrigo A. Reeves, [Rui Shi](#), [Duncan J. Watts](#), Edward J. Wollack, and Zhilei Xu. Long-timescale stability in CMB observations at multiple frequencies using front-end polarization modulation. In Jonas Zmuidzinas and Jian-Rong Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121902Q, August 2022.
- [94] [Joseph R. Eimer](#), Michael K. Brewer, David T. Chuss, John Karakla, [Rui Shi](#), [John W. Appel](#), Charles L. Bennett, [Joseph Cleary](#), Sumit Dahal, [Rahul Datta](#), [Thomas Essinger-Hileman](#), **Tobias A. Marriage**, [Carolina Núñez](#), [Matthew A. Petroff](#), [Duncan J. Watts](#), Edward J. Wollack, and Zhilei Xu. Construction of a large diameter reflective half-wave plate modulator for millimeter wave applications. In Jonas Zmuidzinas and Jian-Rong Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121901N, August 2022.
- [93] [Carolina Nunez](#), [John W. Appel](#), [Sarah Marie Bruno](#), [Rahul Datta](#), Aamir Ali, Charles L. Bennett, Sumit Dahal, [Jullianna Denes Couto](#), Kevin L. Denis, [Joseph Eimer](#), Francisco Espinoza, [Tom Essinger-Hileman](#), Kyle Helson, [Jeffrey Iuliano](#), **Tobias A. Marriage**, [Carolina Morales Pérez](#), Deniz Augusto Nunes Valle, [Matthew A. Petroff](#), Karwan Rostem, [Rui Shi](#), [Duncan J. Watts](#), Edward J. Wollack, and Zhilei Xu. Design and characterization of new 90 GHz detectors for the Cosmology Large Angular Scale Surveyor (CLASS). In Jonas Zmuidzinas and Jian-Rong Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121901J, August 2022.
- [92] [Rahul Datta](#), Michael K. Brewer, [Jullianna D. Couto](#), [Joseph R. Eimer](#), [Yunyang Li](#), Zhilei Xu, [John W. Appel](#), Ricardo Bustos, David T. Chuss, [Joseph Cleary](#), Sumit Dahal, Thomas [Essinger-Hileman](#), [Jeffrey Iuliano](#), **Tobias A. Marriage**, [Carolina Nunez](#), [Matthew A. Petroff](#), Karwan Rostem, [Duncan J. Watts](#), and Edward J. Wollack. Cosmology Large Angular Scale Surveyor (CLASS): pointing stability and beam measurements at 90, 150, and 220 GHz. In Jonas Zmuidzinas and Jian-Rong Gao, editors, *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, volume 12190, page 121902S, August 2022.
- [91] Sumit Dahal, [John W. Appel](#), [Rahul Datta](#), Michael K. Brewer, Aamir Ali, Charles L. Bennett, Ricardo Bustos, [Manwei Chan](#), David T. Chuss, [Joseph Cleary](#), [Jullianna D. Couto](#), Kevin L. Denis, Rolando Dünner, [Joseph Eimer](#), Francisco Espinoza, [Thomas Essinger-Hileman](#), Joseph E. Golec, [Kathleen Harrington](#), Kyle Helson, [Jeffrey Iuliano](#), John Karakla, [Yunyang Li](#), **Tobias A. Marriage**, Jeffrey J. McMahon, Nathan J. Miller, [Sasha Novack](#), [Carolina Núñez](#), Keisuke Osumi, [Ivan L. Padilla](#), Gonzalo A. Palma, [Lucas Parker](#), [Matthew A. Petroff](#), Rodrigo Reeves, [Gary Rhoades](#), Karwan Rostem, Deniz A. N. Valle, [Duncan J. Watts](#), Janet L. Weiland, Edward J. Wollack, and Zhilei Xu. Four-year Cosmology Large Angular Scale Surveyor (CLASS) Observations: On-sky Receiver Performance at 40, 90, 150, and 220 GHz Frequency Bands. *ApJ*, 926(1):33, February 2022.
- [90] [Kathleen Harrington](#), [Rahul Datta](#), Keisuke Osumi, Aamir Ali, [John W. Appel](#), Charles L. Bennett, Michael K. Brewer, Ricardo Bustos, Manwei Chan, David T. Chuss, [Joseph Cleary](#), Jul-

- lianna Denes Couto, Sumit Dahal, Rolando Dünner, [Joseph R. Eimer](#), [Thomas Essinger-Hileman](#), Johannes Hubmayr, Francisco Raul Espinoza Inostroza, [Jeffrey Iuliano](#), John Karakla, [Yunyang Li](#), **Tobias A. Marriage**, Nathan J. Miller, Carolina Núñez, Ivan L. Padilla, Lucas Parker, Matthew A. Petroff, Bastian Pradenas Márquez, Rodrigo Reeves, Pedro Fluxá Rojas, Karwan Rostem, Deniz Augusto Nunes Valle, Duncan J. Watts, Janet L. Weiland, Edward J. Wollack, Zhilei Xu, and Class Collaboration. Two Year Cosmology Large Angular Scale Surveyor (CLASS) Observations: Long Timescale Stability Achieved with a Front-end Variable-delay Polarization Modulator at 40 GHz. *ApJ*, 922(2):212, December 2021.
- [89] [Yunyang Li](#), Adam D. Hincks, Stefania Amodeo, Elia S. Battistelli, J. Richard Bond, Erminia Calabrese, Steve K. Choi, Mark J. Devlin, Jo Dunkley, Simone Ferraro, Vera Gluscevic, Yilun Guan, Mark Halpern, Matt Hilton, Renee Hlozek, **Tobias A. Marriage**, Jeff McMahon, Kavilan Moodley, Sigurd Naess, Federico Nati, Michael D. Niemack, John Orłowski-Scherer, Lyman Page, Bruce Partridge, Maria Salatino, Emmanuel Schaan, Alessandro Schillaci, Neelima Sehgal, Cristóbal Sifón, Suzanne T. Staggs, Alexander van Engelen, Edward J. Wollack, and Zhilei Xu. Constraining Cosmic Microwave Background Temperature Evolution With Sunyaev-Zel'Dovich Galaxy Clusters from the Atacama Cosmology Telescope. *ApJ*, 922(2):136, December 2021.
- [88] Sumit Dahal, Michael K. Brewer, [John W. Appel](#), Aamir Ali, Charles L. Bennett, Ricardo Bustos, Manwei Chan, David T. Chuss, [Joseph Cleary](#), [Jullianna D. Couto](#), [Rahul Datta](#), Kevin L. Denis, [Joseph Eimer](#), Francisco Espinoza, [Thomas Essinger-Hileman](#), Dominik Gothe, [Kathleen Harrington](#), [Jeffrey Iuliano](#), John Karakla, **Tobias A. Marriage**, Sasha Novack, [Carolina Núñez](#), [Ivan L. Padilla](#), [Lucas Parker](#), [Matthew A. Petroff](#), Rodrigo Reeves, Gary Rhoades, Karwan Rostem, Deniz A. N. Valle, [Duncan J. Watts](#), Janet L. Weiland, Edward J. Wollack, and Zhilei Xu. Venus Observations at 40 and 90 GHz with CLASS. *PSJ*, 2(2):71, April 2021.
- [87] [Matthew A. Petroff](#), [John W. Appel](#), Charles L. Bennett, Michael K. Brewer, [Manwei Chan](#), David T. Chuss, [Joseph Cleary](#), [Jullianna Denes Couto](#), Sumit Dahal, [Joseph R. Eimer](#), [Thomas Essinger-Hileman](#), Pedro Fluxá Rojas, [Kathleen Harrington](#), [Jeffrey Iuliano](#), **Tobias A. Marriage**, Nathan J. Miller, Deniz Augusto Nunes Valle, [Duncan J. Watts](#), and Zhilei Xu. Control and systems software for the Cosmology Large Angular Scale Surveyor (CLASS). In *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, volume 11452, page 114521O, December 2020.
- [86] [Thomas Essinger-Hileman](#), Charles L. Bennett, [Lance Corbett](#), Haiquan Guo, Kyle Helson, **Tobias Marriage**, Mary Ann B. Meador, Karwan Rostem, and Edward J. Wollack. Aerogel scattering filters for cosmic microwave background observations. *Appl. Opt.*, 59(18):5439, June 2020.
- [85] [Megan B. Gralla](#), **Tobias A. Marriage**, Graeme Addison, Andrew J. Baker, J. Richard Bond, [Devin Crichton](#), Rahul Datta, Mark J. Devlin, Joanna Dunkley, Rolando Dünner, Joseph Fowler, Patricio A. Gallardo, [Kirsten Hall](#), Mark Halpern, Matthew Hasselfield, Matt Hilton, Adam D. Hincks, Kevin M. Huffenberger, John P. Hughes, Arthur Kosowsky, Carlos H. López-Caraballo, Thibaut Louis, Danica Marsden, Kavilan Moodley, Michael D. Niemack, Lyman A. Page, Bruce Partridge, Jesus Rivera, Jonathan L. Sievers, Suzanne Staggs, [Ting Su](#), Daniel Swetz, and Edward J. Wollack. Atacama Cosmology Telescope: Dusty Star-forming Galaxies and Active Galactic Nuclei in the Equatorial Survey. *ApJ*, 893(2):104, April 2020.
- [84] [Megan B. Gralla](#) and **Tobias A. Marriage**. Accounting for selection bias using simulations: A general method and an application to millimeter-wavelength surveys. *ApJ*, 893(2):103, April 2020.

- [83] Z. Xu, M. K. Brewer, P. Fluxá Rojas, Y. Li, K. Osumi, Bastian Pradenas, A. Ali, J. W. Appel, C. L. Bennett, R. Bustos, M. Chan, D. T. Chuss, J. Cleary, J. D. Couto, S. Dahal, R. Datta, K. Denis, R. Dünner, J. R. Eimer, T. Essinger-Hileman, K. Harrington, J. Iuliano, **T. A. Marriage**, N. J. Miller, C. Núñez, I. L. Padilla, L. Parker, M. A. Petroff, R. Reeves, K. Rostem, D. J. Watts, J. L. Weiland, and E. J. Wollack. Two-year Cosmology Large Angular Scale Surveyor (CLASS) Observations: 40 GHz Telescope Pointing, Beam Profile, Window Function, and Polarization Performance. *ApJ*, 891(2):134, March 2020.
- [82] M. A. Petroff, J. R. Eimer, K. Harrington, A. Ali, J. W. Appel, C. L. Bennett, M. K. Brewer, R. Bustos, M. Chan, D. T. Chuss, J. Cleary, J. D. Couto, S. Dahal, R. Dünner, T. Essinger-Hileman, P. Fluxá Rojas, J. Iuliano, **T. A. Marriage**, N. J. Miller, C. Núñez, I. L. Padilla, L. Parker, R. Reeves, K. Rostem, D. A. N. Valle, D. J. Watts, J. L. Weiland, E. J. Wollack, and Z. Xu. Two-year Cosmology Large Angular Scale Surveyor (CLASS) Observations: A First Detection of Atmospheric Circular Polarization at Q band. *ApJ*, 889(2):120, February 2020.
- [81] I. L. Padilla, J. R. Eimer, Y. Li, Graeme E. Addison, A. Ali, J. W. Appel, C. L. Bennett, R. Bustos, M. K. Brewer, M. Chan, David T. Chuss, J. Cleary, J. D. Couto, S. Dahal, K. Denis, R. Dünner, T. Essinger-Hileman, P. Fluxá, S. K. Haridas, K. Harrington, J. Iuliano, J. Karakla, **T. A. Marriage**, N. J. Miller, C. Núñez, L. Parker, M. A. Petroff, R. Reeves, K. Rostem, R. W. Stevens, D. A. N. Valle, D. J. Watts, J. L. Weiland, E. J. Wollack, and Z. Xu. Two-year Cosmology Large Angular Scale Surveyor (CLASS) Observations: A Measurement of Circular Polarization at 40 GHz. *ApJ*, 889(2):105, February 2020.
- [80] S. Dahal, M. Amiri, J. W. Appel, C. L. Bennett, L. Corbett, R. Datta, K. Denis, T. Essinger-Hileman, M. Halpern, K. Helson, G. Hilton, J. Hubmayr, B. Keller, **T. Marriage**, C. Nunez, M. Petroff, C. Reintsema, K. Rostem, K. U-Yen, and E. Wollack. The CLASS 150/220 GHz Polarimeter Array: Design, Assembly, and Characterization. *Journal of Low Temperature Physics*, January 2020.
- [79] N. Aghanim, M. Douspis, G. Hurier, D. Crichton, J. M. Diego, M. Hasselfield, J. Macias-Perez, **T. A. Marriage**, E. Pointecouteau, M. Remazeilles, and E. Soubrié. PACT. I. Combining ACT and Planck data for improved extraction of tSZ signal. *A&A*, 632:A47, Dec 2019.
- [78] Kirsten R. Hall, Nadia L. Zakamska, Graeme E. Addison, Nicholas Battaglia, Devin Crichton, Mark Devlin, Joanna Dunkley, Megan Gralla, J. Colin Hill, Matt Hilton, Johannes Hubmayr, John P. Hughes, Kevin M. Huffenberger, Arthur Kosowsky, **Tobias A. Marriage**, Loïc Maurin, Kavilan Moodley, Michael D. Niemack, Lyman A. Page, Bruce Partridge, Rolando Dünner Planella, Alessandro Schillaci, Cristóbal Sifón, Suzanne T. Staggs, Edward J. Wollack, and Zhilei Xu. Quantifying the thermal Sunyaev-Zel’dovich effect and excess millimetre emission in quasar environments. *MNRAS*, 490(2):2315–2335, December 2019.
- [77] Jesus Rivera, Andrew J. Baker, Patricio A. Gallardo, Megan B. Gralla, Andrew I. Harris, Kevin M. Huffenberger, John P. Hughes, Charles R. Keeton, Carlos H. López-Caraballo, **Tobias A. Marriage**, Bruce Partridge, Jonathan L. Sievers, Amitpal S. Tagore, Fabian Walter, Axel Weiß, and Edward J. Wollack. The Atacama Cosmology Telescope: CO( $J = 3 - 2$ ) Mapping and Lens Modeling of an ACT-selected Dusty Star-forming Galaxy. *ApJ*, 879(2):95, July 2019.
- [76] J. W. Appel, Z. Xu, I. L. Padilla, K. Harrington, B. Pradenas Marquez, A. Ali, C. L. Bennett, M. K. Brewer, R. Bustos, M. Chan, D. T. Chuss, J. Cleary, J. Cuoto, S. Dahal, K. Denis, R. Dünner, J. R. Eimer, T. Essinger-Hileman, P. Fluxa, D. Gothe, G. C. Hilton, J. Hubmayr, J. Iuliano, J. Karakla, **T. A. Marriage**, N. J. Miller, C. Núñez, L. Parker, M. Petroff, C. D.

- Reintsema, K. Rostem, R. W. Stevens, D. A. Nunes Valle, B. Wang, D. J. Watts, E. J. Wollack, and L. Zeng. On-sky Performance of the CLASS Q-band Telescope. *ApJ*, 876(2):126, May 2019.
- [75] Kirsten R. Hall, Devin Crichton, **Tobias Marriage**, Nadia L. Zakamska, and Rachel Mandelbaum. Downsizing of star formation measured from the clustered infrared background correlated with quasars. *MNRAS*, 480(1):149–181, October 2018.
- [74] D. J. Watts, B. Wang, A. Ali, J. W. Appel, C. L. Bennett, D. T. Chuss, S. Dahal, J. R. Eimer, T. Essinger-Hileman, K. Harrington, G. Hinshaw, J. Iuliano, **T. A. Marriage**, N. J. Miller, I. L. Padilla, M. Petroff, K. Rostem, E. J. Wollack, and Z. Xu. A Projected Estimate of the Reionization Optical Depth Using the CLASS Experiment’s Sample-Variance Limited E-Mode Measurement. *ApJ*, 863:121, August 2018.
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