MICHAEL D. NIEMACK

Cornell University Physics Department and Astronomy Department
Laboratory of Elementary Particle Physics
389 Physical Sciences Building
Ithaca, NY 14853

Office: (607) 255-0391
Fax: (607) 255-2012
email: niemack@cornell.edu
web: www.lepp.cornell.edu/~mdn49

RESEARCH INTERESTS

Cosmology, astrophysics, and fundamental physics: studying inflation, dark energy, dark matter, neutrinos, galaxy clusters, and galaxy evolution using cosmic microwave background (CMB) and sub-mm measurements.
Detector arrays and applied superconductivity: low-temperature detector arrays, superconducting detectors, transition-edge sensor (TES) bolometers, SQUID measurement systems, device physics, sub-Kelvin refrigeration.
Astronomical optics and receivers: deployment, upgrades, and operations at remote high-elevation sites, telescope optics design, cryogenic instrument development, material properties, optical coatings.

EDUCATION

Princeton University - Princeton, NJ
Ph.D., Physics 2008
M.A., Physics 2004
Amherst College - Amherst, MA
B.A. *summa cum laude*, departmental honors in Physics 2002

APPOINTMENTS

Associate Professor - Cornell University Astronomy Department 2019 – present

Associate Professor - Cornell University Physics Department 2018 – present

Assistant Professor - Cornell University Physics Department 2013 – 2018

Research Faculty - University of Colorado, Boulder 2010 – 2012
NIST Physical Measurement Laboratory - Dr. Kent Irwin
National Research Council Postdoctoral Fellow - NIST 2008 – 2010
Quantum Devices Group - Dr. Kent Irwin
Postdoctoral Research Associate - Princeton University 2008
Gravity Group - Dr. Lyman Page
Wilderness Course Instructor - National Outdoor Leadership School 2005

Graduate Student Research Associate - Princeton University 2002 – 2008
Atacama Cosmology Telescope (ACT) Collaboration - Dr. Suzanne Staggs
Undergraduate Research Assistant - Amherst College 2001 – 2002
Molecular Magnets Research - Dr. Jonathan Friedman
DOE National Undergraduate Fellow - Princeton Plasma Physics Laboratory 2001
Hall Thruster Group - Dr. Nathaniel Fisch
Research Technician and Consultant - Caltech and JPL 1998 – 2001
Galaxy Evolution Explorer (GALEX) Group - Dr. Christopher Martin

Primary Research Collaborations

Advanced ACTPol (Institutional PI): A substantial instrument upgrade for the Atacama Cosmology Telescope with more frequencies and a half sky survey to probe inflationary gravity waves and more, *observations 2016-21*
CCAT-prime (Instrument Scientist): A high-throughput 6-meter sub-mm and mm telescope on Cerro Chajnantor to measure clusters, the CMB, high redshift intensity mapping, and galactic ecology, *observations 2021-30+*
NIST Quantum Sensors: Developing CMB polarimeters, superconducting microwave detectors, and SQUID multiplexing techniques for readout of large detector arrays, *collaborator 2008-present*
Simons Observatory (Institutional PI): Joining of forces between the ACT and Simons Array teams to build new telescopes and instruments to pursue CMB science, *observations 2021-30+*
Stage IV CMB Observatory (CMB-S4): The "ultimate" ground-based CMB observatory being developed by several collaborations working together with the NSF and DOE, *observations 2027-34+*

Additional (and past) Research Collaborations

ABS: A low-resolution telescope instrument to probe inflation via the large scale CMB, *observations 2012-14*
ACT & ACTPol: now analyzing data jointly with new ACT measurements, *observations 2008-16*
BFORE: a balloon-borne observatory to measure CMB B-mode foregrounds, *first flight target 2021*
SCUBA-2: A sub-millimeter instrument on the JCMT, *collaborator 2008-2012*
SPTPol: A receiver to measure CMB polarization on the South Pole Telescope, *collaborator 2009-2012*
ZEUS-2: A second generation sub-mm grating spectrometer for the CSO and APEX, *collaborator 2010-present*
350 GHz remote human imager: A security imaging system using TES detectors, *collaborator 2009-2012*

Honors and Awards

World Laureates Forum Young Scientist invited to present at Forum in Shanghai, China	2020
Cornell Graduate Student Assembly Faculty Advising and Mentorship Award, Honorable Mention	2019
World Economic Forum Young Scientist at Annual Meeting of New Champions, Tianjin, China	2018
National Science Foundation CAREER Award	2015
Cornell University Nominee for Packard Fellowship	2014
National Research Council Postdoctoral Fellowship	2008 – 2010
Centennial Fellowship from Princeton University	2002 – 2007
SPIE Scholarship Recipient	2004 – 2006
NASA Group Achievement Award for work on the GALEX space telescope	2004
Optical Research Associates, Optical Design Competition Winner	2004
Joseph Henry Prize from the Princeton University Physics Department	2002
High Distinction on undergraduate thesis from the Amherst College Physics Department	2002
Boeing Science Writing Awards Honorable Mention	2001

Service and Leadership

Simons Observatory Chair of Technical Committee	2021 – present
Cornell Physics Department Chair of Climate, Equity, Diversity, and Inclusion Committee	2020 – present
CMB Stage IV Leader (Level 2) of Large Aperture Telescope Development	2020 – present
CCAT-prime Instrument Scientist	2019 – present
CMB Stage IV Governing Board Member	2018 – present
Cornell Physics Department Chair of Physics 6510/4410 Course Development Committee	2018 – present
CMB Stage IV Co-Leader of Large Aperture Telescope Development	2018 – 2020

Cornell Physics Department Bethe Lecturer Committee	2018 – 2020
CCAT-prime Liaison to Simons Observatory and CMB-S4	2017 – present
CCAT-prime Project Leader: CMB Polarization Science	2017 – present
CMB Stage IV Concept Definition Task Force team member	2017 – 2018
Organized and Hosted joint CCAT-prime and Simons Observatory Optics Meeting, Cornell	2017
President of the Board of Cayuga Heights School Age Program	2017 – 2019
Simons Observatory Technical Board and Optics Working Group Leader	2016 – present
Coordinating CMB Stage IV telescopes working group and technical white paper	2016 – 2017
Convening Instrumentation Discussions at CMB Stage IV workshops	2016 – 2017
Guiding board member of Atacama Cosmology Telescope	2016 – present
Convening CPAD "New Technologies for Discovery" workshop session, Arlington, Texas	2015
Cornell Physics Department Graduate Student "Wise Person"	2015 – 2016
Board member of Cayuga Heights School Age Program	2014 – 2016
Session Chair at SPIE Astronomical Telescopes and Instrumentation Conference in Montreal	2014
Hosted Colloquium and Seminar Speakers in Physics and Astronomy Departments	2013 – present
Member/Coauthor of the NASA Advisory Committee 30-year Astrophysics Roadmap	2013
Bethe Prize Committee for Cornell Physics Department	2013 – 2014
Presentation Judge at Conference for Undergraduate Women in Physics	2013
Participated in recruiting of underrepresented undergraduate students	2013

Journal article reviewer for:

Applied Optics
Astrophysical Journal
Monthly Notices of the Royal Astronomical Society
Astronomy and Astrophysics
Journal of Astronomical Telescopes, Instruments, and Systems
Journal of Cosmology and Astroparticle Physics
Journal of Low-Temperature Physics
Optical Materials Express
Review of Scientific Instruments
IEEE Transactions on Terahertz Science and Technology

Proposal reviewer for:

National Aeronautics and Space Administration
National Science Foundation
Department of Energy
Foreign National Science Foundations

RESEARCH PRESENTATIONS

Invited talk: World Laureates Forum Young Scientist Seminar	2020
Invited talk: AtLAST Telescope Workshop via Zoom	2020
CMB-S4 Workshop and Government Agency Review both via Zoom	2020
Invited talk: European Southern Observatory, Garching, Germany	2019
Invited talk: CMB-S4 Workshop at Fermilab, Batavia, Illinois	2019
Universidad de Chile Workshop, Santiago, Chile	2019
Invited talk: Pontificia Universidad Catolica Seminar, Santiago, Chile	2018
Invited talk: CMB-S4 Workshop at Princeton University, Princeton, New Jersey	2018
Invited talk: CMB-S4 Project Presentation to DOE and NSF, Germantown, Maryland	2018
Invited talk: Cosmo Andes Conference, Santiago, Chile	2018
Invited talk: CMB-S4 Workshop at Harvard, Cambridge, Massachusetts	2017

Low-Temperature Detectors Conference, Kurume, Japan	2017
Invited talk: Canadian Institute for Theoretical Astrophysics Seminar, Toronto, Canada	2017
Invited talk: CMB-S4 Workshop at the Stanford Linear Accelerator, Palo Alto, California	2017
Invited talk: Perimeter Institute Cosmology Seminar, Waterloo, Canada	2017
Invited talk: Amherst College Physics Department Colloquium, Amherst Massachusetts	2016
Invited talk: University of Washington DUSC Seminar, Seattle Washington	2016
Invited talk: Moriond Cosmology Conference, La Thuile, Italy	2016
LBNL Stage IV CMB Project Planning Workshop, Berkeley, California	2016
University of Michigan Stage IV CMB Project Planning Workshop, Ann Arbor, Michigan	2015
Invited talk: NSF Pavilion at International Astronomical Union Conference, Honolulu, HI	2015
Invited poster: Arab-American Frontiers Symoposium, KAUST, Saudi Arabia	2015
International Astronomical Union Conference, Honolulu, HI	2015
Low-Temperature Detectors Conference, Grenoble, France	2015
Invited talk: UC Berkeley Center for Cosmological Physics Seminar, Berkeley, CA	2015
Invited talk: Cornell University Physics Department Colloquium, Ithaca, NY	2014
SPIE Astronomical Telescopes and Instrumentation Conference, Montreal, Canada	2014
Invited talk: Cornell University Astronomy Department Colloquium, Ithaca, NY	2013
Invited talk: Recontres du Vietnam Cosmology in the Planck Era, Quy Nhon, Vietnam	2013
Invited talk: Pontificia Universidad Catolica de Chile Astronomy Colloquium, Santiago, Chile	2013
Invited talk: Cornell High Energy Synchrotron Source Seminar, Ithaca, NY	2013
Invited talk: University of California at San Diego Astrophysics Seminar, San Diego, CA	2013
American Astronomical Society 221st Meeting, Long Beach, CA	2013
Invited talk: Keck Institute for Space Studies CMB Polarization Workshop, Pasadena, CA	2012
Invited talk: California Institute of Technology Astrophysics Seminar, Pasadena, CA	2012
Invited talk: Cornell University Physics Department Seminars, Ithaca, NY	2012
Invited talk: Massachusetts Institute of Technology Astrophysics Colloquium, Boston, MA	2012
Invited talk: University of Chicago Enrico Fermi Institute Colloquium, Chicago, IL	2012
URSI National Radio Science Meeting, Boulder, CO	2012
Invited talk: University of British Columbia Astronomy Colloquium, Vancouver, Canada	2011
Low-Temperature Detectors Conference, Heidelberg, Germany	2011
Technology and Instrumentation in Particle Physics, Chicago, IL	2011
NRAO Building on New Worlds, New Horizons, Santa Fe, NM	2011
Invited talk: ACT/PIRE Workshop on Galaxy Clusters, Durban, South Africa	2011
Invited talk: URSI National Radio Science Meeting, Boulder, CO	2011
SPIE Astronomical Telescopes and Instrumentation Conference, San Diego, CA	2010
Invited talk: University of Colorado CASA/JILA Seminar, Boulder, CO	2010
Invited talk: University of Washington CENPA Seminar, Seattle, WA	2010
Invited talk: US Workshop on Superconductive Electronics, Warner Springs, CA	2009
Invited talk: Case Western Reserve Univ. Particle Astrophysics Seminar, Cleveland, OH	2009
Low Temperature Detectors Conference, Stanford, CA	2009
Invited talk: Upcoming Measurements of CMB Polarization Workshop, Chicago, IL	2009
American Physical Society April Meeting, Denver, CO	2009
American Astronomical Society Annual Meeting, Long Beach, CA 2009 (*poster*)	2009
Invited talk: Kavli Institute for Cosmological Physics Seminar, Chicago, IL	2008
Invited talk: Franklin and Marshall College Physics Dept. Colloquium, Lancaster, PA	2008
Invited talk: NIST Quantum Devices Group Seminar, Boulder, CO	2007
Low Temperature Detectors Conference, Paris, France	2007
Invited talk: California Institute of Technology Cosmology Seminar, Pasadena, CA	2007
Invited talk: UC Berkeley Physics/Astronomy Cosmology Seminar, Berkeley, CA	2006

SPIE Astronomical Telescopes and Instrumentation Conference, Orlando, FL 2006

TEACHING

Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 40 students 2020 fall
Physics 2217 - Electricity and Magnetism, Cornell University, 54 students 2020 spring
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 44 students 2019 fall
AS 1102 - Advising Seminar, Cornell University, 10 students 2019 fall
Physics 2217 - Electricity and Magnetism, Cornell University, 62 students 2019 spring
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 44 students 2018 fall
Physics 1116 - Newtonian Mechanics and Relativity, Cornell University, 37 students 2018 spring
Physics 1116 - Laboratory Development, Cornell University, 27 student section 2017 fall
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 40 students 2017 spring
Physics 1116 - Newtonian Mechanics and Relativity, Cornell University, 75 students 2016 fall
Physics 1116 - Newtonian Mechanics and Relativity, Cornell University, 14 students 2016 spring
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 37 students 2015 fall
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 35 students 2014 fall
Physics 1116 - Newtonian Mechanics and Relativity, Cornell University, 15 students 2014 spring
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 42 students 2013 fall
Physics 4410/6510 - Advanced Experimental Physics, Cornell University, 56 students 2013 spring
National Outdoor Leadership School (NOLS) Instructor, Lander, WY 2005
Rock climbing and backpacking instructor, Amherst College and Princeton Outing Clubs 1999 – 2004

TRAINING

Effective Search Committee Practices – It Depends on the Lens 2020
World Economic Forum Science Communication Development at AMNC 2018 in Tianjin, China 2018
Participated in KIC Science Communication Workshop with Alan Alda 2016
Participated in CTE course on Teaching, Identity, and Wellbeing 2016
Attended CTE "How to Leverage New and Social Media to Elevate the Profile of Your Work" 2015
Participated in CTE workshop on Strategies to Effectively Use iClickers in the Classroom 2015
McCormick Engineering Teaching Excellence Institute Workshop on CAREER Proposals 2014
Attended "Write Winning Grants" Workshop 2013
Center for Teaching Excellence (CTE) New Faculty Institute Participant 2013
National Outdoor Leadership School Instructor Course 2004
National Outdoor Leadership School Semester in the Rockies 1999

OUTREACH

American Physical Society National Mentoring Community Mentor 2020 – present
Developed outreach animation about cosmology research and promoted it via youtube and twitter 2020
Advising student researchers in the Simons–National Society of Black Physicists Program 2020 – present
Public lecture at Fuertes Observatory organized by Cornell Astronomical Society, Ithaca, NY 2019
Interview with Robyn Williams for ABC radio 2019
Presentations and laboratory tours for upstate New York teachers and high school students 2018 – present
"Science on Tap" presentation organized by Graduate Women in Science, Ithaca, NY 2017
Advising student researchers in Summer Research for Community College Student Program 2015 – 2019
Working with Louis Stokes Alliance for Minority Participation Summer Research Students 2014 – 2019
Cosmology discussions and lectures for the Cornell Society of Physics Students 2013 – present

Presentations and lab tours for educators in the NSF RET program and Cornell's CIPT program	2013 – 2016
Interviewed for Cornell Daily Sun and Ithaca Voice Articles	2014
Presentation for high school and community college teachers visiting Cornell	2014
Webcast interview from the Atacama Cosmology Telescope in Chile with the Kavli Foundation	2013
Interviewed by reporters from both New Scientist and the Kavli Institute, Ithaca, NY	2013
Cosmology lecture for the American Meteorological Society, Boulder, CO	2012
Public cosmology lecture at the Fiske Planetarium, Boulder, CO	2012
Public cosmology lecture at the Griffith Observatory, Los Angeles, CA	2010
Interview on German National Radio about CMB polarization and cosmology	2009
American Physical Society press conference on detectors to study the early universe	2009
Princeton graduate alumni association High Table lecture	2007
Princeton physics department graduate student recruiting coordinator	2004 – 2005
Taught astrophysics to students/instructors at the National Outdoor Leadership School	2003 – 2005
PULSE cosmology lecture for middle school students in West Windsor, NJ	2003

Postdoctoral Advisees

Yaqiong Li	2020 – present
Patricio Gallardo	2019 – present
Duc Thuong Hoang	2019 – 2020
Steve K. Choi	2018 – present
Shawn W. Henderson	2013 – 2017
Francesco de Bernardis	2013 – 2017

Graduate Student Advisees

Zach Huber	2019 – present
Cody Duell	2018 – present
Nicholas Cothard	2016 – present
Eve Vavagiakis	2015 – present
Jason R. Stevens – postdoctoral researcher at NIST	2014 – 2020
Patricio A. Gallardo – postdoctoral researcher at Cornell	2013 – 2019
Brian J. Koopman – postdoctoral researcher at Yale	2012 – 2018

Graduate Student Thesis Committees

Bugao Zou, *advisor: Gordon Stacey*	2020 – present
Chris Wilson, *advisor: Rachel Bean*	2019 – present
Dnyanesh Kulkarni, *advisor: Andre Leclair*	2019 – present
Christopher Rooney, *advisor: Gordon Stacey*	2018 – present
Ibrahim Shehzad, *advisor: Eanna E. Flanagan*	2018 – present
Gregory Douthit, *advisor: Gordon Stacey*	2017 – present
Mehmet Demirtas, *advisor: Liam McAllister*	2017 – present
Soumyajit Bose, *advisor: David Chernoff*	2016 – present
Victoria Calafut, *advisor: Rachel Bean*	2016 – 2020
Alexander Grant, *advisor: Eanna E. Flanagan*	2016 – 2020
Paul Corlies, *advisor: Alexander Hayes*	2015 – 2019
Matthew Hankins, *advisor: Terry Herter*	2015 – 2018

Jordan Moxon, *advisor: Eanna Flanagan*	2014 – 2018
Riccardo Pavesi, *advisor: Dominik Riechers*	2014 – 2019
John Stout, *advisor: Liam McAllister*	2014 – 2017
Sina Bahrami, *advisor: Eanna Flanagan*	2013 – 2017
Amit Vishwas, *advisor: Gordon Stacey*	2012 – 2019
Robert Wharton, *advisor: James Cordes*	2012 – 2017
Eva-Maria Mueller, *advisor: Rachel Bean*	2012 – 2015

CORNELL UNDERGRADUATE STUDENT RESEARCHER ADVISEES

Pedro Guicardi, Cornell Class of 2022	2020 – present
Erik Szakiel, Cornell Class of 2021	2020 – present
Haruki Ebina, Cornell Class of 2022	2019 – present
Kshama Malavalli, Cornell Class of 2021	2019 – present
Willow Martin, Cornell Class of 2022	2019 – 2020
Jesse Smith, Cornell Class of 2021	2018 – 2019
Bella Kang, Cornell Class of 2022	2019
Samuel Gomez, Cornell Class of 2020 – working for MITRE corporation	2018 – 2020
Mahiro Abe, Cornell Class of 2020 – physics graduate student at Stanford	2017 – 2020
Noah Sailer, Cornell Class of 2019 – physics graduate student at Berkeley	2017 – 2019
Dallin Richards, Cornell Class of 2021	2018
Grace Song, Cornell Class of 2020	2017 – 2018
Zeqi Gu, Cornell Class of 2020	2017
Justin Williams, Cornell Class of 2020	2017
Philip Jacobson, Cornell Class of 2019 – electrical engineering graduate student at Berkeley	2016 – 2018
Kenny Vetter, Cornell Class of 2018 – physics graduate student at Berkeley	2017 – 2018
Kaiwen Zheng, Cornell Class of 2018 – physics graduate student at Princeton	2016 – 2018
Kristine Lister, Cornell Class of 2018	2015 – 2016
Avirukt Mittal, Cornell Class of 2017 – physics graduate student at Berkeley	2015 – 2017
Prabudhya Bhattacharyya, Cornell Class of 2016 – physics graduate student at Berkeley	2015 – 2016
Brenna Mockler, Cornell Class of 2016 – astronomy graduate student at Santa Cruz	2015 – 2016
Sarah Marie Bruno, Cornell Class of 2016 – physics graduate student at Princeton	2014 – 2016
M. Sheroze Sheriffdeen, Cornell Class of 2016 – computer science graduate student at Austin	2013 – 2014
Liele Getachew, Cornell Class of 2017	2013
Humna Awan, Cornell Class of 2015 – Postdoctoral Fellow at U. Michigan	2014 – 2015
Galen Marchetti, Cornell Class of 2015 – working for Palantir Technologies	2013 – 2014

SUMMER RESEARCH EXPERIENCE FOR UNDERGRADUATE ADVISEES

Dontae Milner, Eastern Illinois University, Simons–National Society of Black Physicists Program	2020
Niloofar Cheraghvandi, Mohawk Valley Community College, SERCCS Program	2019
Michael Jack, Mercer County Community College, SRCCS Program	2018
Almir Tricic, Mohawk Valley Community College, SRCCS Program	2017
Tracy Paltoo, Adelphi University, LSAMP Program	2016
Dennis Dempsey, Adirondack Community College, SRCCS Program	2016
Tafari James, Haverford College, LSAMP Program	2015
Spenser Mann, Adirondack Community College, SRCCS Program	2015
Lenoi Carter, Onondaga Community College, LSAMP Program	2014
Licelotte Fernandez, SUNY New Paltz, LSAMP Program	2014

LIFETIME MEMBERSHIPS

American Physical Society
American Association for the Advancement of Science
National Society of Black Physicists
SPIE: The International Society for Optics and Photonics
Optical Society of America

PUBLICATIONS

Recent publications are available via the Astrophysics Data System (ADS, linked here or search for Niemack). According to the ADS Niemack's current refereed h-index is 47 with 140 refereed publications. *2 / 2021*

Publications with fifteen or more authors have the alphabetized author list shortened to et al.

• Marks publications since 2013 for which Niemack research group members played a major role.
Group member names are in **bold**. *Links are embedded in references below.*

IN PRESS OR IN REVIEW

• **E. M. Vavagiakis, P. A. Gallardo**, V. Calafut, et al. 2021. **"The Atacama Cosmology Telescope: Probing the Baryon Content of SDSS DR15 Galaxies with the Thermal and Kinematic Sunyaev-Zel'dovich Effects,"** arXiv:2101.08373.

• V. Calafut, **E. M. Vavagiakis, P. A. Gallardo**, et al. 2021. **"The Atacama Cosmology Telescope: Detection of the Pairwise Kinematic Sunyaev-Zel'dovich Effect with SDSS DR15 Galaxies,"** arXiv:2101.08374.

• **C. J. Duell, E. M. Vavagiakis**, et al. 2021. **"CCAT-prime: Designs and status of the first light 280 GHz MKID array and Mod-Cam receiver,"** arXiv:2012.10411.

• **E. M. Vavagiakis**, et al. 2021. **"The Simons Observatory: Magnetic Sensitivity Measurements of Microwave SQUID Multiplexers,"** arXiv:2012.04532.

• **N. F. Cothard**, et al. 2021. **"Comparing complex impedance and bias step measurements of Simons Observatory transition edge sensors,"** arXiv:2012.08547.

• **Y. Li**, et al. 2021. **"In situ Performance of the Low Frequency Array for Advanced ACTPol,"** arXiv:2101.02658.

IN PRINT

• J. Gudmundsson, **P. Gallardo**, et al. 2021. **"The Simons Observatory: Modeling Optical Systematics in the Large Aperture Telescope,"** *Applied Optics* DOI:10.1364/AO.411533.

Z. Xu, et al. 2021. **"The Simons Observatory: Metamaterial Microwave Absorber (MMA) and its Cryogenic Applications,"** *Applied Optics* DOI:10.1364/AO.411711.

• **S. K. Choi**, et al. 2020. **"The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave**

Background Power Spectra at 98 and 150 GHz," *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2020/12/045.

• **N. F Cothard, S. K Choi, C. J Duell**, T. Herter, J. Hubmayr, J. McMahon, **M. D Niemack**, T. Nikola, C. Sierra, G. J Stacey, **E. M Vavagiakis**, E. J Wollack, B. Zou 2020. **"The Design of The CCAT-prime Epoch of Reionization Spectrometer Instrument,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-019-02297-1.

• **S. K. Choi**, et al. 2020. **"Sensitivity of the Prime-Cam Instrument on the CCAT-prime Telescope,"** *in press. Journal of Low Temperature Physics* DOI:10.1007/s10909-020-02428-z.

• **P. A. Gallardo**, et al. 2020. **"Characterization of aliased noise in the Advanced ACTPol receiver,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-020-02344-2.

• **J. R. Stevens, N. F. Cothard, E. M. Vavagiakis,** et al. 2020. **"Characterization of Transition Edge Sensors for the Simons Observatory ,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-020-02375-9.

• **E. M. Vavagiakis, N. F. Cothard, J. R. Stevens**, C. L. Chang, **M. D. Niemack**, G. Wang, V. G. Yefremenko, J. Zhang 2020. **"Developing AlMn films for Argonne TES fabrication,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-019-02281-9.

S. Naess, et al. 2020. **"The Atacama Cosmology Telescope: DR5 maps of 18,000 square degrees of the microwave sky from ACT 2008-2018 data,"** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2020/12/046.

S. Aiola, et al. 2020. **"The Atacama Cosmology Telescope: DR4 Maps and Cosmological Parameters,"** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2020/12/047.

M. Madhavacheril, et al. 2020. **"The Atacama Cosmology Telescope: Weighing distant clusters with the most ancient light,"** *Astrophysical Journal Letters* DOI:10.3847/2041-8213/abbccb.

S. Amodeo, et al. 2020. **"The Atacama Cosmology Telescope: Modeling the Gas Thermodynamics in BOSS CMASS galaxies from Kinematic and Thermal Sunyaev-Zel'dovich Measurements,"** *Physical Review D*.

E. Schaan, et al. 2020. **"The Atacama Cosmology Telescope: Combined kinematic and thermal Sunyaev-Zel'dovich measurements from BOSS CMASS and LOWZ halos ,"** *Physical Review D*.

M. S. Madhavacheril, et al. 2020. **"The Atacama Cosmology Telescope: Component-separated maps of CMB temperature and the thermal Sunyaev-Zel'dovich effect,"** *Physical Review D* 102:2, 023534.

Z. Li, et al. 2020. **"The cross correlation of the ABS and ACT maps,"** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2020/09/010.

T. Namikawa, et al. 2020. **"The Atacama Cosmology Telescope: Constraints on Cosmic Birefringence,"** *Physical Review D* 101:8, 083527.

M. S. Rao, et al. 2020 **"Simons Observatory Microwave SQUID Multiplexing Readout – Cryogenic RF Amplifier and Coaxial Chain Design,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-020-02429-y.

M. B. Gralla, et al. 2020 **"Atacama Cosmology Telescope: Dusty star-forming galaxies and active galactic nuclei in the equatorial survey,"** *Astrophysical Journal* 893:2,104.

A. M. Ali, et al. 2020 **"Small Aperture Telescopes for the Simons Observatory,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-020-02430-5.

A. Suzuki, **N. Cothard**, A. T. Lee, **M. D. Niemack**, C. Raum, Mario Renzullo, T. Sasse, **J. Stevens**, P. Truitt, **E. Vavagiakis**, J. Vivalda, B. Westrook, D. Yohannes 2020. **" Commercially fabricated antenna-coupled Transition Edge Sensor bolometer detectors for next generation Cosmic Microwave Background polarimetry experiment,"** *Journal of Low Temperature Physics* DOI:10.1007/s10909-019-02325-0.

• K. N. Quinn, C. B. Clement, **F. De Bernardis, M. D. Niemack**, J. P. Sethna 2019. **"Visualizing probabilistic models and data with Intensive Principal Component Analysis,"** Proceedings of the National Academy of Sciences 116 (28) 13762-13767.

K. Hall, et al. 2019. **"Quantifying the Thermal Sunyaev-Zel'dovich Effect and Excess Millimeter Emission in Quasar Environments ,"** *MNRAS* .

• T. Herter, et al. 2019. **"The CCAT-Prime Submillimeter Observatory,"** *Decadal Survey white paper* arXiv:1909.02587.

The Simons Observatory Collaboration 2019. **"The Simons Observatory: Astro2020 Decadal Project Whitepaper,"** *Decadal Survey white paper* arXiv:1907.08284.

• K. Abazajian, et al. 2019. **"CMB-S4 Decadal Survey APC White Paper,"** *Decadal Survey white paper* arXiv:1908.01062.

• N. Sehgal, et al. 2019. **"CMB-HD: An Ultra-Deep, High-Resolution Millimeter-Wave Survey Over Half the Sky,"** *Decadal Survey white paper* arXiv:1906.10134.

The Simons Observatory Collaboration 2019. **"The Simons Observatory: Science goals and forecasts,"** *Journal of Cosmology and Astroparticle Physics* 2019:2, 56

H. Miyatake et al. 2019. **"Weak-Lensing Mass Calibration of ACTPol Sunyaev-Zel'dovich Clusters with the Hyper Suprime-Cam Survey,"** *Astrophysical Journal* 875:1, 63.

T. Shin et al. 2019. **"Measurement of the Splashback Feature around SZ-selected Galaxy Clusters with DES, SPT and ACT,"** *Monthly Notices of the Royal Astronomical Society* May 2019, 1434.

K. Basu et al. 2019. **"SZ spectroscopy" in the coming decade: Galaxy cluster cosmology and astrophysics in the submillimeter,"** *Decadal Survey white paper* arXiv:1903.04944.

• S. C. Parshley, **M. D. Niemack**, R. Hills, et al. 2018. **"The optical design of the six-meter CCAT-prime and Simons Observatory telescopes,"** Proc. SPIE 10700, 1070041.

• **E. M. Vavagiakis** et al. 2018. **"Prime-Cam: a first-light instrument for the CCAT-prime telescope,"** Proc. SPIE 10708, 107081U.

• **J. R. Stevens**, N. Goeckner-Wald et al. 2018. **"Designs for next generation CMB survey strategies from Chile,"** Proc. SPIE 10708, 1070841.

• **P. A. Gallardo, N. F. Cothard**, R. Puddu, R. Dunner, **B. J. Koopman, M. D. Niemack**, S. Simon, E. J. Wollack 2018. **"Far sidelobes from baffles and telescope support structures in the Atacama Cosmology Telescope,"** Proc. SPIE 10708, 107083Y.

• **N. F. Cothard, M. Abe**, T. Nikola, G. J. Stacey, G. Cortes-Medellin, **P. A. Gallardo, B. J. Koopman, M. D. Niemack**, S. C. Parshley, **E. M. Vavagiakis, K. Vetter** 2018. **"Optimizing the efficiency of Fabry-Perot interferometers with silicon-substrate mirrors,"** Proc. SPIE 10706, 107065B.

• S. R. Dicker, **P. A. Gallardo**, J. E. Gudmudsson, P. D. Mauskopf, et al. 2018. **"Cold optical design for the large aperture Simons' Observatory telescope,"** Proc. SPIE 10700, 107003E.

• **P. A. Gallardo**, J. Gudmundsson, **B. J. Koopman** et al. 2018. **"Systematic uncertainties in the Simons Observatory: optical effects and sensitivity considerations,"** Proc. SPIE 10708, 107082L.

• **E. M. Vavagiakis, S. W. Henderson, K. Zheng** et al. 2018. **"Magnetic Sensitivity of AlMn TESes and Shielding Considerations for Next Generation CMB Surveys,"** *Journal of Low-Temperature Physics* 193:3-4, 288-297.

• **B. Koopman** et al. 2018. **"Advanced ACTPol Low Frequency Array: Readout and Characterization of Prototype 27 and 39 GHz Transition Edge Sensors,"** *Journal of Low-Temperature Physics* 193:5-6, 1103-1111.

M. Hilton et al. 2018. **"The Atacama Cosmology Telescope: The Two-Season ACTPol Sunyaev-Zel'dovich Effect Selected Cluster Catalog,"** *Astrophysical Journal Supplement Series* 235:20, 1.

A. Kusaka, J. Appel, T. Essinger-Hileman et al. 2018. **"Results from the Atacama B-mode Search (ABS) experiment,"** *Journal of Cosmology and Astroparticle Physics* 09(2018), 005.

W. Coulton et al. 2018. **"Non-Gaussianity of secondary anisotropies from ACTPol and Planck,"** *Journal of Cosmology and Astroparticle Physics* 09(2018), 022.

R. Datta, et al. 2018. **"The Atacama Cosmology Telescope: Two-season ACTPol Extragalactic Point Sources and their Polarization properties,"** *Monthly Notices of the Royal Astronomical Society* Nov 2018, 2799.

G. J. Stacey, et al. 2018. **"CCAT-Prime: science with an ultra-widefield submillimeter observatory on Cerro Chajnantor,"** Proc. SPIE 10700, 107001M.

N. Galitzki, et al. 2018. **"The Simons Observatory: instrument overview,"** Proc. SPIE 10708, 1070804.

S. C. Parshley, et al. 2018. **"CCAT-prime: a novel telescope for sub-millimeter astronomy,"** Proc. SPIE 10700, 107005X.

C. Hill, S. M. Bruno, S. Simon, et al. 2018. **"BoloCalc: a sensitivity calculator for the design of Simons Observatory,"** Proc. SPIE 10708, 1070842.

J. Orlowski-Scherer, et al. 2018. **"Simons Observatory large aperture receiver simulation overview,"** Proc. SPIE 10708, 107083X.

N. Zhu, et al. 2018. **"Simons Observatory large aperture telescope receiver design overview,"** Proc. SPIE 10708, 1070829.

G. Coppi, et al. 2018. **"Cooldown strategies and transient thermal simulations for the Simons Observatory,"** Proc. SPIE 10708, 1070827.

K. T. Crowley, et al. 2018. **"Studies of systematic uncertainties for Simons Observatory: detector array effects,"** Proc. SPIE 10708, 107083Z.

Y. Li, et al. 2018. **"Performance of the advanced ACTPol low frequency array,"** Proc. SPIE 10708, 107080A.

S. Bryan, et al. 2018. **"BFORE: a CMB balloon payload to measure reionization, neutrino mass, and cosmic inflation,"** Proc. SPIE 10708, 1070805.

S. Choi et al. 2018. **"Characterization of the Mid-Frequency Arrays for Advanced ACTPol,"** *Journal of Low-Temperature Physics* 193:3-4, 267-275.

S. Simon et al. 2018. **"Advanced ACTPol TES Device Parameters and Noise Performance in Fielded Arrays,"** *Journal of Low-Temperature Physics* 193:5-6, 1041-1047.

K. T. Crowley et al. 2018. **"The Advanced ACTPol 27/39 GHz Array,"** *Journal of Low-Temperature Physics* 193:3-4, 328-336.

S. Bryan et al. 2018. **"Measuring Reionization, Neutrino Mass, and Cosmic Inflation with BFORE,"** *Journal of Low-Temperature Physics* 193:5-6, 1033-1040.

• **A. Mittal, F. de Bernardis, M. D. Niemack** 2018. **"Optimizing measurements of cluster velocities and temperatures for CCAT-prime and future surveys,"** *Journal of Cosmology and Astroparticle Physics 02(2018), 32.*

• **F. De Bernardis**, S. Aiola, **E. M. Vavagiakis**, N. Battaglia, **M. D. Niemack**, et al. 2017. **"Detection of the pairwise kinematic Sunyaev-Zel'dovich effect with BOSS DR11 and the Atacama Cosmology Telescope,"** *Journal of Cosmology and Astroparticle Physics* 03(2017), 008.

• **P. Gallardo, B. Koopman, N. Cothard, S. M. Bruno**, G. Cortes-Medellin, **G. Marchetti**, K. H. Miller, **B. Mockler, M. D. Niemack**, G. Stacey, E. Wollack, 2017. **"Deep etched silicon anti-reflection coatings for sub-millimeter wavelengths,"** *Applied Optics* 56:10, 2796.

T. Louis, E. Grace, M. Hasselfield, M. Lungu, L. Maurin, et al. 2017. **"The Atacama Cosmology Telescope: Two-Season ACTPol Spectra and Parameters,"** *Journal of Cosmology and Astroparticle Physics* 06(2017), 031.

B. D. Sherwin, A. van Engelen, N. Sehgal, M. Madhavacheril, et al. 2017. **" The Atacama Cosmology Telescope: Two-Season ACTPol Lensing Power Spectrum,"** *Physical Review D* 95, 123529.

• M. H. Abitbol, et al. 2017. **"CMB-S4 Technology Book, First Edition,"** arXiv:1706.02464.

E. Calabrese, R. Hlozek, et al. 2017. **"Cosmological parameters from pre-Planck CMB measurements: A 2017 update,"** *Physical Review D* 95, 063525.

T. Su, T. A. Marriage, et al. 2017. **"On the redshift distribution and physical properties of DSFGs from ACT,"** *Monthly Notices of the Royal Astronomical Society* 464:1, 968.

• **M. D. Niemack** 2016. **"Designs for a large-aperture telescope to map the CMB 10X faster,"** *Applied Optics* 55:7, 1688.

R. Thornton, et al. 2016. **"The Atacama Cosmology Telescope: The polarization-sensitive ACTPol instrument,"** *Astrophysical Journal Supplement Series*, 227:21, 1.

D. Crichton, M. B. Gralla, et al. 2016. **"Evidence for the Thermal Sunyaev-Zel'dovich Effect Associated with Quasar Feedback,"** *Monthly Notices of the Royal Astronomical Society* 458, 1478.

E. Schaan, S. Ferraro, et al. 2016. **"Evidence for the kinematic Sunyaev-Zel'dovich effect with ACTPol and velocity reconstruction from BOSS,"** *Physical Review D* 93, 082002.

• **S. W. Henderson, J. R. Stevens**, et al. 2016. **"Readout of two-kilopixel transition-edge sensor arrays for Advanced ACTPol,"** Proc. SPIE 9914, 99141G.

• **F. De Bernardis, J. R. Stevens**, M. Hasselfield, et al. 2016. **"Survey strategy optimization for the Atacama Cosmology Telescope,"** Proc. SPIE 9910, 991014.

• **B. J. Koopman**, et al. 2016. **"Optical modeling and polarization calibration for CMB measurements with ACTPol and Advanced ACTPol,"** Proc. SPIE 9914, 99142T.

J. T. Ward, et al. 2016. **"Mechanical design and development of TES bolometer detector arrays for the Advanced ACTPol experiment,"** Proc. SPIE 9914, 991437.

N. Battaglia, A. Leauthaud, H. Miyatake, M. Hasselfield, M. B. Gralla, et al. 2016. **"Weak-lensing mass calibration of the Atacama Cosmology Telescope equatorial Sunyaev-Zeldovich cluster sample with the Canada-France-Hawaii telescope stripe 82 survey,"** *Journal of Cosmology and Astroparticle Physics* 08, 013.

C. Sifon, N. Battaglia, M. Hasselfield, F. Menanteau, et al. 2016. **"The Atacama Cosmology Telescope: dynamical masses for 44 SZ-selected galaxy clusters over 755 square degrees,"** *Monthly Notices of the Royal Astronomical Society*, 461:1, 248-270.

K. Knowles et al. 2016. **"A giant radio halo in a low-mass SZ-selected galaxy cluster: ACT-CL J0256.5+0006,"** *Monthly Notices of the Royal Astronomical Society*, 459:4, 4240-4258.

• **M. D. Niemack**, et al. 2016. **"BFORE: the B-mode Foreground Experiment,"** *Journal of Low-Temperature Physics* 184:3, 746-753.

• **S. W. Henderson**, et al. 2016. **"Advanced ACTPol cryogenic detector arrays and readout,"** *Journal of Low-Temperature Physics* 184:3, 772-779.

S. M. Duff, et al. 2016. **"Advanced ACTPol Multichroic Polarimeter Array Fabrication Process for 150 mm Wafers,"** *Journal of Low-Temperature Physics* 184:3, 634-641.

R. Datta, et al. 2016. **"Design and Deployment of a Multichroic Polarimeter Array on the Atacama Cosmology Telescope,"** *Journal of Low-Temperature Physics* 184:3, 568-575.

S. P. Ho, C. G. Pappas, et al. 2016. **"The First Multichroic Polarimeter Array on the Atacama Cosmology Telescope: Characterization and Performance,"** *Journal of Low-Temperature Physics* 184:3, 559-567.

C. G. Pappas, et al. 2016. **"High-Density Superconducting Cables for Advanced ACTPol,"** *Journal of Low-Temperature Physics* 184:1, 473-479.

D. Li, et al. 2016. **"AlMn Transition Edge Sensors for Advanced ACTPol,"** *Journal of Low-Temperature Physics* 184:1, 66-73.

K. N. Abazajian, et al. 2016. **"CMB-S4 Science Book, First Edition,"** arXiv:1610.02743.

• E.-M. Mueller, **F. de Bernardis**, R. Bean, **M. D Niemack**, 2015. **"Constraints on massive neutrinos from the pairwise kinematic Sunyaev-Zeldovich effect,"** *Physical Review D* 92:063501.

M. Madhavacheril, N. Sehgal et al. 2015. **"The Atacama Cosmology Telescope: Detection of Lensing of the Cosmic Microwave Background by Dark Matter Halos,"** *Physical Review Letters* 114:151302.

A. van Engelen, B. D. Sherwin, N. Sehgal et al. 2015. **"The Atacama Cosmology Telescope: Lensing of CMB Temperature and Polarization Derived from Cosmic Infrared Background Cross-Correlation,"** *Astrophysical Journal* 808(1):7.

• E.-M. Mueller, **F. de Bernardis**, R. Bean, **M. D. Niemack**, 2015. **"Constraints on gravity and dark energy from the pairwise kinematic Sunyaev-Zeldovich effect,"** *Astrophysical Journal* 808(1):47.

• C. Larson, J. Choi, **P. Gallardo, S. W. Henderson, M. D. Niemack,** G. Rajagopalan, R. Shepherd, 2015. **"Direct Ink Writing of Silicon Carbide for Microwave Optics,"** *Advanced Engineering Materials* 18:1, 39-45.

R. Allison, S. N. Lindsay, B. D. Sherwin et al. 2015. **"The Atacama Cosmology Telescope: measuring radio galaxy bias through cross-correlation with lensing,"** *Monthly Notices of the Royal Astronomical Society* 451(1):849.

R. R. Lindner, P. Aguirre et al. 2015. **"The Atacama Cosmology Telescope: The LABOCA/ACT Survey of Clusters at All Redshifts,"** *Astrophysical Journal* 803(2):79.

B. Kirk, M. Hilton et al. 2015. **"SALT spectroscopic observations of galaxy clusters detected by ACT and a Type II quasar hosted by a brightest cluster galaxy,"** *Monthly Notices of the Royal Astronomical Society* 449(4):4010.

N. Hand, A. Leauthaud, S. Das, B. D. Sherwin et al. 2015. **"First Measurement of the Cross-Correlation of CMB Lensing and Galaxy Lensing,"** *Physical Review D* 91(6):062001.

K. N. Abazajian et al. 2015. **"Inflation Physics from the Cosmic Microwave Background and Large Scale Structure,"** *Astroparticle Physics* 63, 55-65.

K. N. Abazajian et al. 2015. **"Neutrino Physics from the Cosmic Microwave Background and Large Scale Structure,"** *Astroparticle Physics* 63, 66-80.

• S. Naess, M. Hasselfield, J. McMahon, **M. D. Niemack** et al. 2014. **"The Atacama Cosmology Telescope: CMB Polarization at 200** $< l <$ **9000,"** *Journal of Cosmology and Astroparticle Physics* 2014(10):007.

M. B. Gralla, D. Crichton, T. A. Marriage, W. Mo et al. 2014. **"A Measurement of the Millimeter Emission and the Sunyaev-Zel'dovich Effect Associated with Low-Frequency Radio Sources,"** *Monthly Notices of the Royal Astronomical Society* 445(1):460.

E. Calabrese, R. Hlozek et al. 2014. **"Precision Epoch of Reionization studies with next-generation CMB experiments,"** *Journal of Cosmology and Astroparticle Physics* 2014(08):010.

• J. Wheeler, **B. Koopman**, **P. Gallardo**, P. Maloney et al. 2014. **"Antireflection coatings for submillimeter silicon lenses,"** Proceedings of SPIE Vol. 9153, 91532Z.

T. Louis, G. E. Addison, M. Hasselfield et al. 2014. **"The Atacama Cosmology Telescope: Cross Correlation with Planck maps,"** *Journal of Cosmology and Astroparticle Physics* 2014(07):016.

S. Das, T. Louis, M. R. Nolta et al. 2014. **"The Atacama Cosmology Telescope: Temperature and Gravitational Lensing Power Spectrum Measurements from Three Seasons of Data,"** *Journal of Cosmology and Astroparticle Physics* 2014(04):014.

D. Marsden, M. Gralla, T. A. Marriage, E. R. Switzer, B. Partridge, M. Massardi, G. Morales et al. 2014. **"The Atacama Cosmology Telescope: Dusty Star-Forming Galaxies and Active Galactic Nuclei in the Southern Survey,"** *Monthly Notices of the Royal Astronomical Society* **439**:1556-74.

C. Ferkinhoff et al. 2014. **"The Second-generation z (Redshift) and Early Universe Spectrometer. I. First-light Observation of a Highly Lensed Local-ULIRG Analog at High-z,"** *Astrophysical Journal* **780**:142.

E. Grace et al. 2014. **"ACTPol: on-sky performance and characterization,"** Proceedings of SPIE Vol. 9153, 915310.

G. J. Stacey et al. 2014. **"SWCam: the short wavelength camera for the CCAT Observatory,"** Proceedings of SPIE Vol. 9153, 91530L.

S. M. Simon, S. Raghunathan et al. 2014. **"Characterization of the Atacama B-mode Search,"** Proceedings of SPIE Vol. 9153, 91530Y.

R. Datta, J. Hubmayr, C. Munson et al. 2014. **"Horn Coupled Multichroic Polarimeters for the Atacama Cosmology Telescope Polarization Experiment,"** *Journal of Low Temperature Physics* 10909:1134-4.

E. A. Grace et al. 2014. **"Characterization and Performance of a Kilo-TES Sub-Array for ACTPol,"** *Journal of Low Temperature Physics* 10909:1125-5.

C. G. Pappas et al. 2014. **"Optical Efficiency and R(T,I) Measurements of ACTPol TESes Using Time Domain Multiplexing Electronics,"** *Journal of Low Temperature Physics* 10909:1066-4.

E. M. George et al. 2014. **"A Study of Al-Mn Transition Edge Sensor Engineering for Stability,"** *Journal of Low Temperature Physics* 10909:0994-3.

C. Kouveliotou et al. 2014. **"Enduring Quests-Daring Visions (NASA Astrophysics in the Next Three Decades),"** NASA Advisory Committee 30-year Astrophysics Roadmap Report, arXiv:1401.3741.

• S. Hanany, **M. D. Niemack**, L. Page, 2013. **"CMB Telescopes and Optical Systems,"** pages 431-480 in: *Planets, Stars and Stellar Systems (PSSS), Volume 1: Telescopes and Instrumentation,* editor I. McLean, Springer, New York, NY.

• R. Datta, C. D. Munson, **M. D. Niemack**, J. McMahon, J. Britton, E. Wollack et al. 2013. **"Large-aperture wide-bandwidth anti-reflection-coated silicon lenses for millimeter wavelengths,"** *Applied Optics* **52**:8747.

E. Calabrese, R. A. Hlozek et al. 2013. **"Cosmological Parameters from Pre-Planck CMB Measurements,"** *Physical Review D* **87**:103012.

J. L. Sievers, R. A. Hlozek, M. R. Nolta et al. 2013. **"The Atacama Cosmology Telescope: Cosmological parameters from three seasons of data,"** *Journal of Cosmology and Astroparticle Physics* 2013(10):060.

M. Hasselfield, K. Moodley et al. 2013. **"The Atacama Cosmology Telescope: Beam Measurements and the Microwave Brightness Temperatures of Uranus and Saturn,"** *Astrophysical Journal Supplement Series* **209**:17.

M. Hilton, M. Hasselfield, C. Sifon et al. 2013. **"The Atacama Cosmology Telescope: the stellar content of galaxy clusters selected using the Sunyaev-Zel'dovich effect,"** *Monthly Notices of the Royal Astronomical Society* **435**:3469.

J. Dunkley, E. Calabrese, J. Sievers et al. 2013. **"The Atacama Cosmology Telescope: likelihood for small-scale**

CMB data," *Journal of Cosmology and Astroparticle Physics* 2013(07):025.

M. Hasselfield, M. Hilton, T. A. Marriage et al. 2013. **"The Atacama Cosmology Telescope: Sunyaev-Zel'dovich Selected Galaxy Clusters at 148 GHz from Three Seasons of Data,"** *Journal of Cosmology and Astroparticle Physics* 2013(07):008.

C. Sifon, F. Menanteau, M. Hasselfield, T. A. Marriage, J. P. Hughes, L. F. Barrientos, J. Gonzalez, L. Infante et al. 2013. **"The Atacama Cosmology Telescope: Dynamical Masses and Scaling Relations for a Sample of Massive Sunyaev-Zel'dovich Effect Selected Galaxy Clusters,"***Astrophysical Journal* **772**:1.

W. S. Holland et al. 2013. **"SCUBA-2: The 10000 pixel bolometer camera on the James Clerk Maxwell Telescope,"** *Monthly Notices of the Royal Astronomical Society*, **430**:2513-33.

N. Sehgal et al. 2013. **"The Atacama Cosmology Telescope: Relation Between Galaxy Cluster Optical Richness and Sunyaev-Zel'dovich Effect,"** *Astrophysical Journal* **767**:38.

F. Menanteau, C. Sifon et al. 2013. **"The Atacama Cosmology Telescope: Physical Properties of Sunyaev-Zel'dovich Effect Clusters on the Celestial Equator,"** *Astrophysical Journal* **765**:1.

R. Dunner, M. Hasselfield, T. A. Marriage, J. Sievers et al. 2013. **"The Atacama Cosmology Telescope: Data Characterization and Map Making,"** *Astrophysical Journal* **762**:10.

S. Simon et al. 2013. **"In Situ Time Constant and Optical Efficiency Measurements of TRUCE Pixels in the Atacama B-Mode Search,"** *Journal of Low Temperature Physics*

E. Grace et al. 2013. **"Design and Performance of Kilo-Pixel TES Arrays for ACTPol,"** *IEEE Trans. on Applied Superconductivity* **23**:2500704.

D. Li, J. Gao et al. 2013. **"Improvements in Silicon Oxide Dielectric Loss for Superconducting Microwave Detector Circuits,"** *IEEE Trans. on Applied Superconductivity* **23**:1501204.

H. Miyatake et al. 2012. **"Subaru weak lensing measurement of a z = 0.81 cluster discovered by the Atacama Cosmology Telescope Survey,"** *Monthly Notices of the Royal Astronomical Society*, **429**:3627-44.

M. D. Niemack, J. Beall, D. Becker, H.-M. Cho, A. Fox, G. Hilton, J. Hubmayr, K. Irwin, D. Li, J. McMahon, J. Nibarger, J. Van Lanen, 2012. **"Optimizing feedhorn-coupled TES polarimeters for balloon and space-based CMB observations,"** *Journal of Low Temperature Physics*, **167**:917-22.

N. Hand et al. 2012. **"Evidence of Galaxy Cluster Motions with the Kinematic Sunyaev-Zel'dovich Effect,"** *Physical Review Letters* **109**:041101.

F. Menanteau, J. P. Hughes, C. Sifon, M. Hilton, J. Gonzalez, L. Infante et al. 2012. **"The Atacama Cosmology Telescope: ACT-CL J0102-4215 "El Gordo," a Massive Merging Cluster at Redshift 0.87,"** *Astrophysical Journal* **748**:7.

M. J. Wilson, B. D. Sherwin, J. C. Hill et al. 2012. **"The Atacama Cosmology Telescope: A Measurement of the Thermal Sunyaev-Zel'dovich Effect Using the Skewness of the CMB Temperature Distribution,"** *Physical Review D* **86**:122005.

B. D. Sherwin, S. Das, A. Hajian et al. 2012. **"The Atacama Cosmology Telescope: Cross-Correlation of CMB Lensing and Quasars,"** *Physical Review D* **86**:083006.

G. Cataldo, J. A. Beall, H.-M. Cho, B. McAndrew, **M. D. Niemack**, E. J. Wollack, 2012. **"Infrared dielectric properties of low-stress silicon nitride,"** *Optics Letters* **37**:4200-2.

R. Hlozek, J. Dunkley et al. 2012. **"The Atacama Cosmology Telescope: a measurement of the primordial power spectrum,"** *Astrophysical Journal* **749**:90.

E. D. Reese, T. Mroczkowski, F. Menanteau, M. Hilton, J. Sievers et al. 2012. **"The Atacama Cosmology Telescope: High-Resolution Sunyaev-Zel'dovich Array Observations of ACT SZE-selected Clusters from the Equatorial Strip,"** *Astrophysical Journal* **751**:12.

A. Hajian, M. P. Viero et al. 2012. **"Correlations in the (Sub)millimeter background from ACTxBLAST,"** *Astrophysical Journal* **744**:1.

K. D. Irwin, H. M. Cho, W. B. Doriese, J. W. Fowler, G. C. Hilton, **M. D. Niemack**, C. D. Reintsema, D. R. Schmidt, J. N. Ullom, L. R. Vale, 2012. **"Advanced Multiplexers for Superconducting Detector Arrays,"** *Journal of Low Temperature Physics* **167**:588-94.

J. McMahon, J. Beall, D. Becker, H.-M. Cho, R. Datta, A. Fox, N. Halverson, J. Hubmayr, K. Irwin, J. Nibarger, **M. D. Niemack**, H. Smith, 2012. **"Multichroic feedhorn-coupled TES polarimeters,"** *Journal of Low Temperature Physics*, **167**:879-84.

L. Bleem et al. 2012. **"An Overview of the SPTpol Experiment,"** *Journal of Low Temperature Physics*, **167**:859-64.

D. Bintley, M. Macintosh, W. Holland, J. Dempsey, P. Friberg, H. Thomas, P. Ade, R. Sudiwala, K. Irwin, G. Hilton, **M. D. Niemack**, M. Amiri, E. Chapin, M. Halpern, 2012. **"Commissioning SCUBA-2 at JCMT and optimising the performance of the superconducting TES arrays,"** *Journal of Low Temperature Physics*, **167**:152-60.

J. Hubmayr et al. 2012. **"An all silicon feedhorn coupled focal plane for cosmic microwave background polarimetry,"** *Journal of Low Temperature Physics*, **167**:522-27.

J. Nibarger, J. Beall, D. Becker, H.-M. Cho, A. Fox, G. Hilton, J. Hubmayr, K. Irwin, D. Li, J. McMahon, **M. D. Niemack**, J. van Lanen, 2012. **"Silicon Platelet Corrugated Feedhorns for CMB Measurements,"** *Journal of Low Temperature Physics*, **167**:904-10.

C. L. Chang et al. 2012. **"Optical and Thermal Properties of ANL/KICP Polarization Sensitive Bolometers for SPTpol,"** *Journal of Low Temperature Physics*, **167**:865-71.

J. E. Austermann et al. 2012. **"SPTpol: an instrument for CMB polarization measurements with the South Pole Telescope,"** Proc. SPIE 8452:84521E.

E.M. George et al. 2012. **"Performance and on-sky optical characterization of the SPTpol instrument,"** Proc. SPIE 8452:84521F.

D. Bintley, M. J. MacIntosh, W. S. Holland et al. 2012. **"Scaling the summit of the submillimetre: instrument performance of SCUBA-2,"** Proc. SPIE 8452:845208.

C. Ferkinhoff et al. 2012. **"Design and first-light performance of TES bolometer arrays for submillimeter spectroscopy with ZEUS-2,"** Proc. SPIE 8452:845207.

K. Story, E. Leitch et al. 2012. **"South Pole Telescope Software Systems: Control, Monitoring, and Data**

Acquisition," Proc. SPIE 8452:84510T.

J. W. Henning et al. 2012. **"Feedhorn-coupled TES polarimeter camera modules at 150 GHz for CMB polarization measurements with SPTpol,"** Proc. SPIE 8452:845239.

J.T.Sayre et al. 2012. **"Design and characterization of 90 GHz feedhorn-coupled TES polarimeter pixels in the SPTpol camera,"** Proc. SPIE 8452:84523A.

B. D. Sherwin, J. Dunkley, S. Das et al. 2011. **"Evidence for dark energy from the cosmic microwave background alone using the Atacama Cosmology Telescope lensing measurements,"** *Physical Review Letters* **107**:021302.

S. Das, B. D. Sherwin et al. 2011. **"Detection of the Power Spectrum of Cosmic Microwave Background Lensing by the Atacama Cosmology Telescope,"** *Physical Review Letters* **107**:021301.

N. Sehgal, H. Trac et al. 2011. **"The Atacama Cosmology Telescope: Cosmology from Galaxy Clusters Detected via the Sunyaev-Zel'dovich Effect,"***Astrophysical Journal* **732**:44.

T. A. Marriage et al. 2011. **"The Atacama Cosmology Telescope: Sunyaev Zel'dovich Selected Galaxy Clusters at 148 GHz in the 2008 Survey,"** *Astrophysical Journal* **737**:61.

N. Hand et al. 2011. **"The Atacama Cosmology Telescope: Detection of Sunyaev-Zel'dovich Decrement in Groups and Clusters Associated with Luminous Red Galaxies,"** *Astrophysical Journal* **736**:39.

D. S. Swetz et al. 2011. **"Overview of the Atacama Cosmology Telescope: Receiver, Instrumentation, and Telescope Systems,"** *Astrophysical Journal Supplement Series* **194**:41.

T. A. Marriage, J. B. Juin, Y.-T. Lin, D. Marsden, M. R. Nolta, B. Partridge et al. 2011. **"Atacama Cosmology Telescope: Extragalactic Sources at 148 GHz in the 2008 Survey,"** *Astrophysical Journal* **731**:100.

J. Dunkley, R. Hlozek, J. Sievers et al. 2011. **"The Atacama Cosmology Telescope: Cosmological Parameters from the 2008 Power Spectra,"** *Astrophysical Journal* **739**:52.

S. Das, T. A. Marriage et al. 2011. **"The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave Background Power Spectrum at 148 and 218 GHz from the 2008 Southern Survey,"** *Astrophysical Journal* **729**:62.

A. Hajian et al. 2011 **"The Atacama Cosmology Telescope: Calibration with WMAP Using Cross-Correlations,"** *Astrophysical Journal* **740**:86.

J. Hubmayr et al. 2011. **"Stability of Al-Mn Transition Edge Sensors for Frequency Domain Multiplexing,"** *IEEE Trans. on Applied Superconductivity* **21**(3):203.

D. R. Schmidt, H.-M. Cho, J. Hubmayr, P. Lowell, **M. D. Niemack**, G. C. O'Neil, J. N. Ullom, K. W. Yoon, K. D. Irwin, W. L. Holzapfel, M. Lueker, E. M. George, E. Shirokoff, 2011. **"Al-Mn Transition Edge Sensors for Cosmic Microwave Background Polarimeters,"** *IEEE Trans. on Applied Superconductivity* **21**(3):196.

M. D. Niemack et al. 2010. **"ACTPol: A polarization-sensitive receiver for the Atacama Cosmology Telescope,"** Proc. SPIE 7741:77411S.

M. D. Niemack, J. Beyer, H. M. Cho, W. B. Doriese, G. C. Hilton, K. D. Irwin, C. D. Reintsema, D. R. Schmidt, J. N. Ullom, L. R. Vale, 2010. **"Code-division SQUID multiplexing,"** *Applied Physics Letters* **96**:163509.

F. Menanteau, J. Gonzalez, J.-B. Juin, T. A. Marriage, E. Reese et al. 2010. **"The Atacama Cosmology Telescope: Physical Properties and Purity of a Galaxy Cluster Sample Selected via the Sunyaev-Zel'dovich Effect,"** *Astrophysical Journal* **723**:1523.

J. W. Fowler et al. 2010. **"The Atacama Cosmology Telescope: A measurement of the 600 $<$ l $<$ 8000 cosmic microwave background power spectrum at 148 GHz,"** *Astrophysical Journal* **722**:1148.

A. D. Hincks et al. 2010. **"The Atacama Cosmology Telescope (ACT): Beam profiles and first SZ cluster maps,"** *Astrophysical Journal Supplement Series* **191**:423.

D. Bintley, M. J. MacIntosh, W. S. Holland et al. 2010. **"Characterising the SCUBA-2 superconducting bolometer arrays,"** Proc. SPIE 7741:774106.

J. W. Britton, J. P. Nibarger, K. W. Yoon, J. A. Beall, D. Becker, H.-M. Cho, G. C. Hilton, J. Hubmayr, **M. D. Niemack**, K. D. Irwin, 2010. **"Corrugated silicon platelet feed horn array for CMB polarimetry at 150 GHz,"** Proc. SPIE 7741:77410T.

J. W. Henning et al. 2010. **"Optical efficiency of feedhorn-coupled TES polarimeters for next-generation CMB instruments,"** Proc. SPIE 7741:774122.

D. Becker et al. 2010. **"A 350-GHz high-resolution high-sensitivity passive video imaging system,"** Proc. SPIE 7670:76700M.

K. D. Irwin, **M. D. Niemack**, J. Beyer, H. M. Cho, W. B. Doriese, G. C. Hilton, C. D. Reintsema, D. R. Schmidt, J. N. Ullom, L. R. Vale, 2010. **"Code-division multiplexing of superconducting transition-edge sensor arrays,"** *Superconducting Science and Technology* **23**(3):034004.

M. D. Niemack, R. Jimenez, L. Verde, F. Menanteau, B. Panter, D. Spergel, 2009. **"Improving photometric redshifts using GALEX observations for the SDSS Stripe 82 and the next generation of optical and SZ cluster surveys,"** *Astrophysical Journal* **690**:89-101.

R. Jimenez, D. N. Spergel, **M. D. Niemack**, F. Menanteau, J. P. Hughes, L. Verde, A. Kosowsky, 2009. **"Southern Cosmology Survey III. QSOs from combined GALEX and optical photometry,"** *Astrophysical Journal Supplement Series* **181**(2):439-443.

J. E. Austermann, **M. D. Niemack** et al. 2009. **"Measurements of bolometer uniformity for feedhorn coupled TES polarimeters,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:498-501.

T. Essinger-Hileman et al. 2009. **"The Atacama B-Mode Search: CMB Polarimetry with Transition-Edge-Sensor Bolometers,"***Low Temperature Detectors - AIP Conference Proceedings* **1185**:494-97.

J. J. McMahon et al. 2009. **"SPTpol: an instrument for CMB polarization,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:511-14.

K. W. Yoon et al. 2009. **"Feedhorn-Coupled TES Polarimeters for Next-Generation CMB Instruments,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:515-18.

L. E. Bleem et al. 2009. **"Optical properties of feedhorn-coupled TES polarimeters for CMB polarimetry,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:479-82.

J. W. Appel et al. 2009. **"Characterizing and modeling the noise and complex impedance in feedhorn-coupled TES polarimeters,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:211-14.

J. McMahon et al. 2009. **"Planar orthomode transducers for feedhorn-coupled TES polarimeters,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:490-93.

J. Britton, K. W. Yoon, J. A. Beall, D. Becker, H. M. Cho, G. C. Hilton, **M. D. Niemack**, K. D. Irwin, 2009. **"Progress toward corrugated feedhorn arrays in silicon,"** *Low Temperature Detectors - AIP Conference Proceedings* **1185**:375-78.

J. Aguirre et al. 2009. **"Observing the Evolution of the Universe,"** Science White Paper submitted to the US Astro2010 Decadal Survey.

M. D. Niemack et al. 2008. **"A kilopixel array of TES bolometers for ACT: Development, testing, and first light,"** *Journal of Low Temperature Physics* **151**(3-4):690-696.

S. T. Staggs et al. 2008. **"The Atacama B-mode Search: an experiment to measure the polarization of the cosmic microwave background at large angular scales,"** CMB Polarization Systematics Workshop Proceedings.

E. S. Battistelli et al. 2008. **"Automated SQUID tuning procedure for kilo-pixel arrays of TES bolometers on the Atacama Cosmology Telescope,"** Proc. SPIE 7020:702028.

A. D. Hincks et al. 2008. **"The effects of the mechanical performance and alignment of the Atacama Cosmology Telescope on the sensitivity of microwave observations,"** Proc. SPIE 7020:70201P.

D. S. Swetz et al. 2008. **"Instrument design and characterization of the Millimeter Bolometer Array Camera on the Atacama Cosmology Telescope,"** Proc. SPIE 7020:702008.

E. R. Switzer et al. 2008. **"Systems and control software for the Atacama Cosmology Telescope,"** Proc. SPIE 7019:70192L.

R. J. Thornton et al. 2008. **"Opto-mechanical design and performance of a compact three-frequency camera for the Millimeter Bolometer Array Camera on the Atacama Cosmology Telescope,"** Proc. SPIE 7020:70201R.

Y. Zhao et al. 2008. **"Characterization of transition edge sensors for the Millimeter Bolometer Array Camera on the Atacama Cosmology Telescope,"** Proc. SPIE 7020:70200O.

D.T. Chuss et al. 2008. **"The Polarimeter for Observing Inflationary Cosmology at the Reionization Epoch,"** CMB Polarization Systematics Workshop Proceedings.

M. D. Niemack, 2008. **Towards Dark Energy: Design, development, and preliminary data from ACT,"** Doctoral Thesis, Princeton University.

J. W. Fowler, **M. D. Niemack**, S. R. Dicker et al. 2007. **"Optical design of the Atacama Cosmology Telescope and Millimeter Bolometric Array Camera,"** *Applied Optics* **46**(17):3444-3454.

M. N. Vitousek, M. A. Mitchell, A. M. Woakes, **M. D. Niemack**, M. Wikelski, 2007. **"High costs of female choice in a lekking lizard,"** *PLoS ONE* **2**(6): e567.

M. D. Niemack for the ACT Collaboration, 2006. **"Measuring two-millimeter radiation with a prototype multiplexed TES receiver for ACT,"** Proc. SPIE 6275:62750C.

T. Shutt et al. 2005. **"The XENON dark matter experiment"** Nuclear Physics B - Proceedings Supplements, 138:156-9.