

# MICHAEL D. NIEMACK

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## 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

**Professor - Cornell University Physics Department & Astronomy Department** 2023 – present

**Associate Professor - Cornell University Physics Department & Astronomy Department** 2018 – 2023

**Visiting Scientist - University of Innsbruck, Institute für Experimentalphysik** 2021 – 2022

**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*

## RESEARCH INTERESTS

**Cosmology, astrophysics, and fundamental physics:** studying inflation, dark energy, dark matter, neutrinos, galaxy/cluster evolution, and transients 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.

## 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 constrain the Hubble constant and more, *observations 2016-22*

CCAT Observatory (Instrument Scientist): A high-throughput 6-meter sub-mm and mm telescope on Cerro Chajnantor to measure clusters, CMB, high redshift intensity mapping, and galactic ecology, *observations 2025-30+*

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 2023-30+*

Stage IV CMB Observatory (CMB-S4): The “ultimate” ground-based CMB observatory including multiple telescopes in Chile and at the South Pole, *observations 2030-40+*

NIST Quantum Sensors: Developing CMB polarimeters, superconducting microwave detectors, and SQUID multiplexing techniques for readout of large detector arrays, *collaborator 2008-present*

## 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 VI Young Scientist invited to present in person in Shanghai, China 2023

World Laureates Forum IV Young Scientist invited to present virtually in Shanghai, China 2021

World Laureates Forum III Young Scientist invited to present virtually 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**

Cornell Physics Department Co-Chair of Climate, Equity, Diversity, and Inclusion Committee 2023 – present  
Simons Observatory Chair of Technical Committee 2021 – present  
Cornell Physics Department Chair of Faculty Search Committee 2020 – 2021  
CMB Stage IV Leader (Level 2) of Large Aperture Telescope Development 2020 – present  
Cornell Physics Department Chair of Climate, Equity, Diversity, and Inclusion Committee 2020 – 2021  
CCAT Instrument Scientist 2019 – present  
CMB Stage IV Governing Board Member 2018 – 2021  
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 Liaison to Simons Observatory and CMB-S4 2017 – present  
CCAT Project Leader: CMB Polarization Science 2017 – present  
CMB Stage IV Concept Definition Task Force team member 2017 – 2018  
Organized and Hosted joint CCAT 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 – 2021  
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  
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*

*Applied Physics Letters*

*Applied Thermal Engineering*

*Astronomy and Astrophysics*

*Astrophysical Journal*

*IEEE Transactions on Terahertz Science and Technology*

*Journal of Astronomical Telescopes, Instruments, and Systems*

*Journal of Cosmology and Astroparticle Physics*

*Journal of Low-Temperature Physics*

*Monthly Notices of the Royal Astronomical Society*

*Optics Express*

*Optical Materials Express*

*Review of Scientific Instruments*

Proposal reviewer for:

National Aeronautics and Space Administration

National Science Foundation

Department of Energy

## Foreign National Science Foundations

### RESEARCH PRESENTATIONS

<i>Invited talk:</i> University of Chicago Astrophysics Colloquium, Chicago, IL	2024
<i>Invited talk:</i> National Science Foundation Principle Investigator Meeting, Alexandria, VA	2024
<i>Invited talk:</i> Institute for High Energy Physics Seminar, Beijing, China	2023
<i>Invited talk:</i> World Laureates Forum VI Hub Seminar, Shanghai, China	2023
<i>Invited talk:</i> University of Innsbruck Physics Colloquium, Innsbruck, Austria	2022
Fifteenth Pisa Meeting on Advanced Detectors, Elba, Italy	2022
<i>Invited talk:</i> University of Cologne Astrophysics Seminar, Cologne, Germany	2022
<i>Invited talk:</i> European Southern Observatory Lunch Talk, Munich, Germany	2022
<i>Invited talk:</i> World Laureates Forum IV Young Scientist Seminar	2021
<i>Invited talk:</i> Institute for Quantum Optics and Quantum Information Seminar, Innsbruck, Austria	2021
CMB-S4 Workshop and Reviews via Zoom	2021
<i>Invited talk:</i> World Laureates Forum III Young Scientist Seminar	2020
<i>Invited talk:</i> AtLAST Telescope Workshop via Zoom	2020
CMB-S4 Workshop and Government Agency Review both via Zoom	2020
<i>Invited talk:</i> European Southern Observatory, Garching, Germany	2019
<i>Invited talk:</i> CMB-S4 Workshop at Fermilab, Batavia, Illinois	2019
Universidad de Chile Workshop, Santiago, Chile	2019
<i>Invited talk:</i> Pontificia Universidad Catolica Seminar, Santiago, Chile	2018
<i>Invited talk:</i> CMB-S4 Workshop at Princeton University, Princeton, New Jersey	2018
<i>Invited talk:</i> CMB-S4 Project Presentation to DOE and NSF, Germantown, Maryland	2018
<i>Invited talk:</i> Cosmo Andes Conference, Santiago, Chile	2018
<i>Invited talk:</i> CMB-S4 Workshop at Harvard, Cambridge, Massachusetts	2017
Low-Temperature Detectors Conference, Kurume, Japan	2017
<i>Invited talk:</i> Canadian Institute for Theoretical Astrophysics Seminar, Toronto, Canada	2017
<i>Invited talk:</i> CMB-S4 Workshop at the Stanford Linear Accelerator, Palo Alto, California	2017
<i>Invited talk:</i> Perimeter Institute Cosmology Seminar, Waterloo, Canada	2017
<i>Invited talk:</i> Amherst College Physics Department Colloquium, Amherst Massachusetts	2016
<i>Invited talk:</i> University of Washington DUSC Seminar, Seattle Washington	2016
<i>Invited talk:</i> 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
<i>Invited talk:</i> NSF Pavilion at International Astronomical Union Conference, Honolulu, HI	2015
<i>Invited poster:</i> Arab-American Frontiers Symposium, KAUST, Saudi Arabia	2015
International Astronomical Union Conference, Honolulu, HI	2015
Low-Temperature Detectors Conference, Grenoble, France	2015
<i>Invited talk:</i> UC Berkeley Center for Cosmological Physics Seminar, Berkeley, CA	2015
<i>Invited talk:</i> Cornell University Physics Department Colloquium, Ithaca, NY	2014
SPIE Astronomical Telescopes and Instrumentation Conference, Montreal, Canada	2014
<i>Invited talk:</i> Cornell University Astronomy Department Colloquium, Ithaca, NY	2013
<i>Invited talk:</i> Recontres du Vietnam Cosmology in the Planck Era, Quy Nhon, Vietnam	2013
<i>Invited talk:</i> Pontificia Universidad Catolica de Chile Astronomy Colloquium, Santiago, Chile	2013
<i>Invited talk:</i> Cornell High Energy Synchrotron Source Seminar, Ithaca, NY	2013
<i>Invited talk:</i> University of California at San Diego Astrophysics Seminar, San Diego, CA	2013
American Astronomical Society 221st Meeting, Long Beach, CA	2013

<i>Invited talk:</i> Keck Institute for Space Studies CMB Polarization Workshop, Pasadena, CA	2012
<i>Invited talk:</i> California Institute of Technology Astrophysics Seminar, Pasadena, CA	2012
<i>Invited talk:</i> Cornell University Physics Department Seminars, Ithaca, NY	2012
<i>Invited talk:</i> Massachusetts Institute of Technology Astrophysics Colloquium, Boston, MA	2012
<i>Invited talk:</i> University of Chicago Enrico Fermi Institute Colloquium, Chicago, IL	2012
URSI National Radio Science Meeting, Boulder, CO	2012
<i>Invited talk:</i> 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
<i>Invited talk:</i> ACT/PIRE Workshop on Galaxy Clusters, Durban, South Africa	2011
<i>Invited talk:</i> URSI National Radio Science Meeting, Boulder, CO	2011
SPIE Astronomical Telescopes and Instrumentation Conference, San Diego, CA	2010
<i>Invited talk:</i> University of Colorado CASA/JILA Seminar, Boulder, CO	2010
<i>Invited talk:</i> University of Washington CENPA Seminar, Seattle, WA	2010
<i>Invited talk:</i> US Workshop on Superconductive Electronics, Warner Springs, CA	2009
<i>Invited talk:</i> Case Western Reserve Univ. Particle Astrophysics Seminar, Cleveland, OH	2009
Low Temperature Detectors Conference, Stanford, CA	2009
<i>Invited talk:</i> 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 ( <i>poster</i> )	2009
<i>Invited talk:</i> Kavli Institute for Cosmological Physics Seminar, Chicago, IL	2008
<i>Invited talk:</i> Franklin and Marshall College Physics Dept. Colloquium, Lancaster, PA	2008
<i>Invited talk:</i> NIST Quantum Devices Group Seminar, Boulder, CO	2007
Low Temperature Detectors Conference, Paris, France	2007
<i>Invited talk:</i> California Institute of Technology Cosmology Seminar, Pasadena, CA	2007
<i>Invited talk:</i> UC Berkeley Physics/Astronomy Cosmology Seminar, Berkeley, CA	2006
SPIE Astronomical Telescopes and Instrumentation Conference, Orlando, FL	2006

## TEACHING

<i>Physics 1110 - Introduction to Experimental Physics</i> , Cornell University, 692 students	2024 spring
<i>Physics 2210 - Exploring Experimental Physics</i> , Cornell University, 22 students	2024 spring
<i>Physics 6561 - Electrodynamics</i> , Cornell University, 35 students	2023 fall
<i>Physics 6561 - Classical Electrodynamics</i> , Cornell University, 35 students	2022 fall
<i>Physics 4410/6510 - Advanced Experimental Physics Curriculum Upgrade</i> , Cornell University	2021 spring
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 40 students	2020 fall
<i>Physics 2217 - Electricity and Magnetism</i> , Cornell University, 54 students	2020 spring
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 44 students	2019 fall
<i>AS 1102 - Advising Seminar</i> , Cornell University, 10 students	2019 fall
<i>Physics 2217 - Electricity and Magnetism</i> , Cornell University, 62 students	2019 spring
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 44 students	2018 fall
<i>Physics 1116 - Newtonian Mechanics and Relativity</i> , Cornell University, 37 students	2018 spring
<i>Physics 1116 - Laboratory Development</i> , Cornell University, 27 student section	2017 fall
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 40 students	2017 spring
<i>Physics 1116 - Newtonian Mechanics and Relativity</i> , Cornell University, 75 students	2016 fall
<i>Physics 1116 - Newtonian Mechanics and Relativity</i> , Cornell University, 14 students	2016 spring
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 37 students	2015 fall
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 35 students	2014 fall

<i>Physics 1116 - Newtonian Mechanics and Relativity</i> , Cornell University, 15 students	2014 spring
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , Cornell University, 42 students	2013 fall
<i>Physics 4410/6510 - Advanced Experimental Physics</i> , 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

Fostering a more cohesive and effective department - Workshop with Astronomy Department	2024
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

Laboratory tours for Conference for Undergraduate Women in Physics (CUWIP)	2023
Laboratory tours for Expanding Your Horizons (EYH) Conferences	2022 – present
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

Samantha Walker, Cornell CURES Fellow	2023 – present
Eve Vavagiakis, NSF Postdoctoral Fellow	2021 – present
Yaqiong Li, Research Scientist at Institute for High Energy Physics, Beijing, China	2020 – 2023
Patricio Gallardo, Postdoctoral Fellow at University of Chicago	2019 – 2021
Duc Thuong Hoang, Researcher at University of Minnesota	2019 – 2020
Steve K. Choi, Assistant Professor at UC Riverside	2018 – 2023
Shawn W. Henderson, Research Scientist at SLAC	2013 – 2017
Francesco de Bernardis, Data Analyst	2013 – 2017

## GRADUATE STUDENT ADVISEES

Ema Smith	2023 – present
Alicia Middleton	2022 – present
Lawrence Lin	2022 – present
Ben Keller	2021 – present
Zach Huber	2019 – present
Cody Duell	2018 – present
Nicholas Cothard – Postdoctoral Fellow at NASA GSFC	2016 – 2021
Eve Vavagiakis – Postdoctoral Fellow at Cornell	2015 – 2021
Jason R. Stevens – Engineer at Moog Space and Defense	2014 – 2020
Patricio A. Gallardo – Postdoctoral Fellow at University of Chicago	2013 – 2019
Brian J. Koopman – Research Scientist at Yale	2012 – 2018

## GRADUATE STUDENT THESIS COMMITTEES

Benjamin Vaughan, <i>advisor: Abby Crites</i>	2023 – present
Sukhman Singh, <i>advisor: Abby Crites</i>	2022 – 2023
Rodrigo Freundt, <i>advisor: Gordon Stacey</i>	2021 – present
Yulin Gong, <i>advisor: Rachel Bean</i>	2021 – present
Bugao Zou, <i>advisor: Gordon Stacey</i>	2020 – present
Chris Wilson, <i>advisor: Rachel Bean</i>	2019 – present
Dnyanesh Kulkarni, <i>advisor: Andre Leclair</i>	2019 – present
Christopher Rooney, <i>advisor: Gordon Stacey</i>	2018 – present
Ibrahim Shehzad, <i>advisor: Eanna E. Flanagan</i>	2018 – 2022
Gregory Douthit, <i>advisor: Gordon Stacey</i>	2017 – present
Mehmet Demirtas, <i>advisor: Liam McAllister</i>	2017 – 2021
Soumyajit Bose, <i>advisor: David Chernoff</i>	2016 – 2023
Victoria Calafut, <i>advisor: Rachel Bean</i>	2016 – 2020
Alexander Grant, <i>advisor: Eanna E. Flanagan</i>	2016 – 2020
Paul Corlies, <i>advisor: Alexander Hayes</i>	2015 – 2019
Matthew Hankins, <i>advisor: Terry Herter</i>	2015 – 2018
Jordan Moxon, <i>advisor: Eanna Flanagan</i>	2014 – 2018
Riccardo Pavesi, <i>advisor: Dominik Riechers</i>	2014 – 2019
John Stout, <i>advisor: Liam McAllister</i>	2014 – 2017
Sina Bahrami, <i>advisor: Eanna Flanagan</i>	2013 – 2017

Amit Vishwas, <i>advisor: Gordon Stacey</i>	2012 – 2019
Robert Wharton, <i>advisor: James Cordes</i>	2012 – 2017
Eva-Maria Mueller, <i>advisor: Rachel Bean</i>	2012 – 2015

## **CORNELL UNDERGRADUATE STUDENT RESEARCHER ADVISEES**

Andy Yang, Cornell Class of 2027	2024 – present
Hoanan Gong, Cornell Class of 2026	2023 – present
Elaine Ran, Cornell Class of 2026	2023 – present
Aiden Keck, Cornell Class of 2025	2023 – present
Sagnik Saha, Cornell Class of 2023	2023
Thomas Mitchell, Cornell Class of 2023	2023
Ari Mirsky, Cornell Class of 2025	2022 – 2023
Colin Murphy, Cornell Class of 2025	2022 – present
Frank Verdi, Cornell Class of 2024	2022 – 2023
Eleana Schoonover, Cornell Class of 2024	2022
Akimasa Ihara, Cornell Class of 2023	2021 – 2022
Dallin Richards, Cornell Class of 2023	2018 – 2022
Pedro Guicardi, Cornell Class of 2022 – Physics graduate student at Caltech	2020 – 2022
Haruki Ebina, Cornell Class of 2022 – Physics graduate student at Berkeley	2019 – 2022
Haoting Zhen, Cornell Class of 2022 – Physics graduate student at Hong Kong U. Sci. & Tech.	2021 – 2022
Photon Xu, Cornell Class of 2022 – Physics graduate student at UCSD	2021 – 2022
Willow Martin, Cornell Class of 2022 – Physics graduate student at Stanford	2019 – 2020
Kshama Malavalli, Cornell Class of 2022	2019 – 2022
Erik Szakiel, Cornell Class of 2021 – Applied Physics graduate student at Stanford	2020 – 2021
Jesse Smith, Cornell Class of 2021 – Physics graduate student at NYU	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
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 – Postdoctoral Fellow at Johns Hopkins	2014 – 2016
M. Sheroze Sherifdeen, Cornell Class of 2016 – Computer Science graduate student at UT Austin	2013 – 2014
Liele Getachew, Cornell Class of 2017 – Working for Goldman Sachs	2013
Humna Awan, Cornell Class of 2015 – Postdoctoral Fellow at U. Michigan	2014 – 2015
Galen Marchetti, Cornell Class of 2015 – Co-Founder & CEO at Kurtosis Technologies	2013 – 2014

## **SUMMER RESEARCH EXPERIENCE FOR UNDERGRADUATE ADVISEES**

Antwine Willis, Washington University, Simons–National Society of Black Physicists Program	2023
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Ben Gebhardt, Rochester Institute of Technology, Cornell Astronomy REU Program	2023
Woodkensia Charles, Haverford College, Simons–National Society of Black Physicists Program	2022
Kaylah McGowan, University of Arizona, Simons–National Society of Black Physicists Program	2021
Dontae Milner, Eastern Illinois University, Simons–National Society of Black Physicists Program	2020
Niloofer 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 Association for the Advancement of Science  
 American Physical Society  
 National Society of Black Physicists  
 Optical Society of America  
 SPIE: The International Society for Optics and Photonics

## 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 55 with 182 refereed publications. 2 / 2024

*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

N. MacCrann, et al. 2023. **“The Atacama Cosmology Telescope: Mitigating the impact of extragalactic foregrounds for the DR6 CMB lensing analysis,”** arXiv:2304.05196

J. Orłowski-Scherer, et al. 2023. **“The Atacama Cosmology Telescope: Millimeter Observations of a Population of Asteroids or: ACTeroids,”** arXiv:2306.05468

W. R. Coulton, et al. 2023. **“The Atacama Cosmology Telescope: High-resolution component-separated maps across one-third of the sky,”** arXiv:2307.01258

C. Hervias-Caimapo, et al. 2023. **“The Atacama Cosmology Telescope: Flux Upper Limits from a Targeted Search for Extragalactic Transients,”** arXiv:2301.07651.

C. Vargas, et al. 2023. **“The Atacama Cosmology Telescope: Extragalactic Point Sources in the Southern Surveys at 150, 220 and 280 GHz observed between 2008-2010,”** arXiv:2310.17535.

## IN PRINT

M. S. Madhavacheril, et al. 2024. **“The Atacama Cosmology Telescope: DR6 Gravitational Lensing Map and Cosmological Parameters,”***The Astrophysical Journal* DOI:10.3847/1538-4357/acff5f

F. J. Qu, et al. 2024. **“The Atacama Cosmology Telescope: A Measurement of the DR6 CMB Lensing Power Spectrum and its Implications for Structure Growth,”***The Astrophysical Journal*  
DOI:10.3847/1538-4357/acfe06

Y. Gong, R. Bean, P. A. Gallardo, E. M. Vavagiakis, N. Battaglia, and M. Niemack 2024. **Pairwise kSZ signal extraction efficacy and optical depth estimation,”** *Physical Review D* DOI:10.1103/PhysRevD.109.023513

S. Shaikh, et al. 2024. **Cosmology from cross-correlation of ACT-DR4 CMB lensing and DES-Y3 cosmic shear,”** *Physical Review D* DOI:10.1093/mnras/stad3987

• Y. Li, E. Biermann, S. Naess, et al. 2023. **“The Atacama Cosmology Telescope: Systematic Transient Search of 3-Day Maps,”** *The Astrophysical Journal* DOI:10.3847/1538-4357/ace599

• CCAT-Prime Collaboration, et al. 2023. **“CCAT-prime Collaboration: Science Goals and Forecasts with Prime-Cam on the Fred Young Submillimeter Telescope,”** *Astrophysical Journal Supplement Series*  
DOI:10.3847/1538-4365/ac9838

• P. Gallardo, et al. 2023. **“Freeform three-mirror anastigmatic large-aperture telescope and receiver optics for CMB-S4,”** *Applied Optics* DOI:10.1364/AO.501744

• T. Natoli, B. Benson, J. Carlstrom, E. Chauvin, B. Clavel, N. Emerson, P. Gallardo, M. Niemack, S. Padin, K. Schwab, L. Stenvers, and J. Zivick 2023. **“Fabrication of a monolithic 5 m aluminum reflector for millimeter-wavelength observations of the cosmic microwave background,”** *Applied Optics*  
DOI:10.1364/AO.488901

Z. Atkins, et al. 2023. **“The Atacama Cosmology Telescope: map-based noise simulations for DR6,”** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2023/11/073

T. Mroczkowski, C. Cicone, M. Reichert, P. Gallardo, H. Kaercher, R. Hills, D. Bok, E. Dahl, P. Dubois-dit-Bonclaud, A. Kiselev, M. Timpe, T. Zimmerer, S. Dicker, M. Macintosh, P. Klaassen, and M. Niemack 2023. **“Progress in the Design of the Atacama Large Aperture Submillimeter Telescope,”** *URSI GASS* DOI:10.23919/URSIGASS57860.2023.10265372

M. Mallaby-Kay, et al. 2023. **“Kinematic Sunyaev-Zel’dovich effect with ACT, DES, and BOSS: A novel hybrid estimator,”** *Physical Review D* DOI:10.1103/PhysRevD.108.023516

I. Gullett, et al. 2023. **“Sidelobe Modeling and Mitigation for a Three Mirror Anastigmat Cosmic Microwave Background Telescope,”** *Applied Optics* DOI:10.1364/AO.488454

• E. M. Vavagiakis, C. J. Duell, et al. 2022. **“CCAT-prime: design of the Mod-Cam receiver and 280 GHz MKID instrument module,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2630115

• S. Choi, C. Duell, et al. 2022. **“CCAT-prime: Characterization of the First 280 GHz MKID Array for Prime-Cam,”** *Journal of Low Temperature Physics* DOI:10.1007/s10909-022-02787-9

• Z. Huber, Y. Li, E. Vavagiakis, et al. 2022. **“The Simons Observatory: Magnetic Shielding Measurements for the Universal Multiplexing Module,”** *Journal of Low Temperature Physics*

DOI:10.1007/s10909-022-02875-w

- **H. Ebina, R. Keskitalo, J. Borrill, S. K. Choi, T. Kisner, S. Naess, M. D. Niemack, J. R. Stevens** 2022. **“Wide field high cadence CMB survey designs for Chilean telescopes,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629816
- **Y. Li, et al.** 2022. **“CCAT-prime: the design of the epoch of reionization spectrometer detector arrays,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2630209
- **Z. B. Huber, S. K. Choi, C. J. Duell, R. G. Freundt, P. A. Gallardo, B. Keller, Y. Li, L. T. Lin, M. D. Niemack, T. Nikola, D. A. Reichers, G. Stacey, E. M. Vavagiakis, B. Zou** 2022. **“CCAT-prime: the optical design for the Epoch of reionization spectrometer,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629744
- **P. A. Gallardo, et al.** 2022. **“Optical design concept of the CMB-S4 large-aperture telescopes and cameras,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2626876
- C. Hill, et al. 2022. **“Atacama Cosmology Telescope: Constraints on prerecombination early dark energy,”** *Physical Review D* DOI:10.1103/PhysRevD.105.123536
- G. E. Chesmore, K. Harrington, et al. 2022. **“Simons Observatory: characterizing the Large Aperture Telescope Receiver with radio holography,”** *Applied Optics* DOI:10.1364/AO.470138
- M. Lungu, et al. 2022. **“The Atacama Cosmology Telescope: measurement and analysis of 1D beams for DR4,”** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2022/05/044
- A. Sinclair, et al. 2022. **“CCAT-prime: RFSoc based readout for frequency multiplexed kinetic inductance detectors,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629722
- J. A. Connors, et al. 2022. **“Magnetic Field Sensitivity of Microwave SQUID Multiplexers,”** *Journal of Low Temperature Physics* DOI:10.1007/s10909-022-02806-9
- B. Zou, **S. K. Choi, N. F. Cothard, R. Freundt, Z. B. Huber, Y. Li, M. D. Niemack, T. Nikola, D. A. Reichers, K. M. Rossi, G. J. Stacey, E. M. Vavagiakis** 2022. **“CCAT-prime: the design and characterization of the silicon mirrors for the Fabry-Perot interferometer in the Epoch of reionization spectrometer,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629518
- J. Lashner, et al. 2022. **“The Simons Observatory: Complex Impedance Measurements for a Full Focal-Plane Module,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629374
- A. I. Huber, et al. 2022. **“CCAT-prime: optical and cryogenic design of the 850 GHz module for Prime-Cam,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2630370
- T. Nikola, et al. 2022. **“CCAT-prime: the epoch reionization spectrometer for prime-cam on FYST,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2629338
- S. C. Chapman, et al. 2022. **“CCAT-prime: the 850 GHz camera for prime-cam on FYST,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2630628
- G. J. Stacey, et al. 2022. **“CCAT-prime/FYST: a status report on the ultra-widefield submillimeter observatory on Cerro Chajnantor,”** *Proceedings of the SPIE, Volume 12190* DOI:10.1117/12.2630380

- Y. Wang, K. Zheng, et al. 2022. **“Simons Observatory Focal-Plane Module: In-lab Testing and Characterization Program,”** *Journal of Low Temperature Physics* DOI:10.1007/s10909-022-02870-1
- E. Healy, D. Dutcher, et al. 2022. **“The Simons Observatory 220 and 280 GHz Focal-Plane Module: Design and Initial Characterization,”** *Journal of Low Temperature Physics* DOI:10.1007/s10909-022-02788-8
- M. Gatti, et al. 2022. **“Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and Planck thermal Sunyaev-Zel’dovich effect observations. I. Measurements, systematics tests, and feedback model constraints,”** *Physical Review D* DOI:10.1103/PhysRevD.105.123525
- S. Pandey, et al. 2022. **“Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and Planck thermal Sunyaev-Zel’dovich effect observations. II. Modeling and constraints on halo pressure profiles,”** *Physical Review D* DOI:10.1103/PhysRevD.105.123526
- T. Morris, et al. 2022. **“The Atacama Cosmology Telescope: Modeling bulk atmospheric motion,”** *Physical Review D* DOI:10.1103/PhysRevD.105.042004
- K. Abazajian, et al. 2022. **“Snowmass 2021 CMB-S4 White Paper,”** *Contribution to Snowmass 2021* arXiv:2203.08024
- The CMB-HD Collaboration 2022. **“Snowmass 2021 CMB-HD White Paper,”** *Contribution to Snowmass 2021* arXiv:2203.05728
- K. Abazajian, et al. 2022. **“CMB-S4: Forecasting Constraints on Primordial Gravitational Waves ,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac1596.
- E. Vavagiakis, P. Gallardo, V. Calafut, S. Amodeo, et al. 2021. **“The Atacama Cosmology Telescope: Probing the baryon content of SDSS DR15 galaxies with the thermal and kinematic Sunyaev-Zel’dovich effects,”** *Physical Review D* DOI:10.1103/PhysRevD.104.043503.
  - V. Calafut, P. Gallardo, E. Vavagiakis, et al. 2021. **“The Atacama Cosmology Telescope: Detection of the pairwise kinematic Sunyaev-Zel’dovich effect with SDSS DR15 galaxies,”** *Physical Review D* DOI:10.1103/PhysRevD.104.043502.
  - E. Vavagiakis, et al. 2021. **“The Simons Observatory: Magnetic Sensitivity Measurements of Microwave SQUID Multiplexers,”** *IEEE Transactions on Applied Superconductivity* DOI:10.1109/TASC.2021.3069294.
  - Y. Guan, S. Clark, B. Hensley, P. Gallardo, S. Naess, C. J. Duell, et al. 2021. **“The Atacama Cosmology Telescope: Microwave Intensity and Polarization Maps of the Galactic Center,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac133f.
  - Y. Li, et al. 2021. **“In situ Performance of the Low Frequency Array for Advanced ACTPol,”** *IEEE Transactions on Applied Superconductivity* DOI:10.1109/TASC.2021.3063334.
- S. Naess, et al. 2021. **“The Atacama Cosmology Telescope: A Search for Planet 9,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac2307.
- 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.
- M. Hilton, et al. 2021. **“The Atacama Cosmology Telescope: A Catalog of ~4000 Sunyaev-Zel’dovich Galaxy Clusters,”** *Astrophysical Journal Supplement Series* DOI:10.3847/1538-4365/abd023.

- S. Naess, et al. 2021. **“The Atacama Cosmology Telescope: Detection of Millimeter-wave Transient Sources,”** *Astrophysical Journal* DOI:10.3847/1538-4357/abfe6d.
- M. Mallaby-Kay, et al. 2021. **“The Atacama Cosmology Telescope: Summary of DR4 and DR5 Data Products and Data Access,”** *Astrophysical Journal Supplement Series* DOI:10.3847/1538-4365/abfcc4.
- S. Adhikari, et al. 2021. **“Probing Galaxy Evolution in Massive Clusters Using ACT and DES: Splashback as a Cosmic Clock,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac0bbc.
- Y. Li, et al. 2021. **“Constraining Cosmic Microwave Background Temperature Evolution With Sunyaev-Zel’dovich Galaxy Clusters from the Atacama Cosmology Telescope,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac26b6.
- N. C. Robertson, et al. 2021. **“Strong detection of the CMB lensing and galaxy weak lensing cross-correlation from ACT-DR4, Planck Legacy, and KiDS-1000,”** *Astronomy and Astrophysics* DOI:10.1051/0004-6361/202039975.
- S. Amodeo, et al. 2021. **“Atacama Cosmology Telescope: Modeling the gas thermodynamics in BOSS CMASS galaxies from kinematic and thermal Sunyaev-Zel’dovich measurements,”** *Physical Review D* DOI:10.1103/PhysRevD.103.063514.
- E. Schaan, et al. 2021. **“Atacama Cosmology Telescope: Combined kinematic and thermal Sunyaev-Zel’dovich measurements from BOSS CMASS and LOWZ halos,”** *Physical Review D* DOI:10.1103/PhysRevD.103.063513.
- N. Zhu, et al. 2021. **“The Simons Observatory Large Aperture Telescope Receiver,”** *Astrophysical Journal Supplement Series* DOI:10.3847/1538-4365/ac0db7.
- G. Chesmore, et al. 2021. **“Simons Observatory HoloSim-ML: machine learning applied to the efficient analysis of radio holography measurements of complex optical systems,”** *Applied Optics* DOI:10.1364/AO.435007.
- H. McCarrick, E. Healy, et al. 2021. **“The Simons Observatory Microwave SQUID Multiplexing Detector Module Design,”** *Astrophysical Journal* DOI:10.3847/1538-4357/ac2232.
- T. Shin, et al. 2021. **“The mass and galaxy distribution around SZ-selected clusters,”** *Monthly Notices of the Royal Astronomical Society* DOI:10.1093/mnras/stab2505.
- D. Han, et al. 2021. **“The Atacama Cosmology Telescope: delensed power spectra and parameters,”** *Journal of Cosmology and Astroparticle Physics* DOI:10.1088/1475-7516/2021/01/031.
- Z. Xu, et al. 2021. **“The Simons Observatory: The Large Aperture Telescope (LAT),”** *Research Notes of the AAS* DOI:10.3847/2515-5172/abf9ab.
- J. Orłowski-Scherer, et al. 2021. **“Atacama Cosmology Telescope measurements of a large sample of candidates from the Massive and Distant Clusters of WISE Survey,”** *Astronomy and Astrophysics* DOI:10.1051/0004-6361/202141200.
- Z. Xu, et al. 2021. **“The Simons Observatory: Metamaterial Microwave Absorber (MMA) and its Cryogenic Applications,”** *Applied Optics* DOI:10.1364/AO.411711.
- O. Darwish, et al. 2021. **“The Atacama Cosmology Telescope: a CMB lensing mass map over 2100 square**

degrees of sky and its cross-correlation with BOSS-CMASS galaxies,” *Monthly Notices of the Royal Astronomical Society* DOI:10.1093/mnras/staa3438.

• 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,” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2562757.

• N. F. Cothard, et al. 2021. “Comparing complex impedance and bias step measurements of Simons Observatory transition edge sensors,” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2575912.

• 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.

D. Henke, et al. 2020. “Optical design study for the 860 GHz first-light camera module of CCAT-p,” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2560695.

• 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.

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.

K. Harrington, et al. 2020. “The integration and testing program for the Simons Observatory Large Aperture Telescope optics tubes,” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2562647.

Z. Xu, et al. 2020. “The Simons Observatory: the Large Aperture Telescope Receiver (LATR) integration and validation results,” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2576151.

- E. Healy, et al. 2020. “**Assembly development for the Simons Observatory focal plane readout module,**” *Proceedings of the SPIE, Volume 11453* DOI:10.1117/12.2561743.
- 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. Gudmundsson, 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. Orłowski-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. Sifton 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. Sifton, 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. Sifton 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. McMahan, 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. McMahan, **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. Holzappel, 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.