Eve M. Vavagiakis

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Cornell University
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Research Interests

Cosmology and astrophysics, analysing maps of the cosmic microwave background (CMB) to study galaxy clusters, galaxy evolution, neutrinos, dark energy, and fundamental physics.

Cryogenic receivers and astronomical instrumentation, designing and developing cryogenic instrumentation for CMB and sub-mm measurements.

Applied superconductivity in cosmology/astronomical survey devices, measuring low-temperature devices including transition edge sensor bolometers and SQUIDs to study device physics and deploy next-generation detector arrays.

Education

Cornell University, Ithaca, NY
Ph.D., Physics 2021
Thesis: *Measuring the Sunyaev-Zel'dovich Effects with Current and Future Observatories*
M.S., Physics 2017

Cornell University, Ithaca, NY
B.A., Physics with Astronomy Concentration 2014

Appointments

Postdoctoral Research Associate, Cornell University, Ithaca, NY 2021 – Present
Graduate Research Assistant, Cornell University, Ithaca, NY 2019 – 2021
Provost Diversity Fellow, Cornell University, Ithaca, NY Spring 2021
NSF Graduate Research Fellow, Cornell University, Ithaca, NY 2015 – 2019
Advisor: Prof. Michael Niemack. Atacama Cosmology Telescope, CCAT-prime, CMB-S4, and Simons Observatory Collaborations
Research Fellow, Caltech, Pasadena, CA Fall 2014
Advisor: Prof. Jamie Bock. CIBER-2 project
Undergraduate Research Assistant, Cornell University, Ithaca, NY 2011 – 2014
Advisor: Prof. Gordon Stacey. SOFIA and ZEUS-2

Honors and Awards

Provost Diversity Fellowship, Cornell University 2021
National Science Foundation Graduate Research Fellowship 2014 – 2019
Stirling A. Colgate Travel Award 2017
Dr. Gerald A. Soffen Memorial Fund Travel Grant 2014
Cranson W. and Edna B. Shelley Award for Undergraduate Research in Astronomy 2013
Tony Alt Memorial Foundation Scholarship 2010 – 2014
Dean's List Scholar, Cornell University 2010 – 2013

Research Collaborations

Advanced ACTPol (2015 – Present): Analysis of CMB maps for cosmology and astrophysics. Screened TESes and SQUIDs, remotely observed using the Atacama Cosmology Telescope on Cerro Toco in northern Chile.

CCAT-prime (2017 – Present): Design and and development of first light instrumentation for the Fred Young Submillimeter Telescope, a high-throughput 6-meter sub-mm and mm telescope on Cerro Chajnantor being built in northern Chile.

CMB-S4 (2018 – Present): Superconducting film and detector testing for the next-generation ground-based CMB effort uniting the experimental cosmology community.

Simons Observatory (2016 – Present): Detector testing, magnetic shielding requirement development, cryogenic testbed development, and SZ analysis pipeline work for an array of CMB telescopes being built on Cerro Toco. Co-lead, Education and Public Engagement Working Group.

Past Research Collaborations

CIBER-2 (2014): Designing a shielding pop-up baffle for the second generation sounding rocket-borne Cosmic Infrared Background Experiment.

SOFIA (2011-2014): Designing and testing prototype Miniature Cryogenic Scanning Fabry-Perot (MCSF) interferometers for the FORCAST instrument on the Stratospheric Observatory for Infrared Astronomy.

ZEUS-2 (2011): Writing a data reduction program for the second generation sub-mm grating spectrometer for the CSO and APEX.

Publications, Main Author

10) **E. M. Vavagiakis**, P. A. 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*, Phys. Rev. D 104, 043503, DOI:10.1103/PhysRevD.104.043503, arXiv:2101.08373.

9) V. Calafut, P. A. Gallardo, **E. M. Vavagiakis** et al. 2021. *The Atacama Cosmology Telescope: Detection of the Pairwise Kinematic Sunyaev-Zel'dovich Effect with SDSS DR15 Galaxies*, Phys. Rev. D 104, 043502, DOI:10.1103/PhysRevD.104.043502, arXiv:2101.08374.

8) C. J. Duell, **E. M. Vavagiakis** et al. 2020. *CCAT-prime: Designs and Status of the First Light 280 GHz MKID Array and Mod-Cam Receiver*, Proc. SPIE 11453, arXiv:2012.10411.

7) **E. M. Vavagiakis** et al. 2020. *The Simons Observatory: Magnetic Sensitivity Measurements of Microwave SQUID Multiplexers*, IEEE Transactions on Applied Superconductivity, 31, 5, DOI:10.1109/TASC.2021.3069294, arXiv:2012.04532.

6) **E. M. Vavagiakis**, N. F. Cothard, J. R. Stevens et al. 2019. *Developing AlMn films for Argonne TES fabrication*, Journal of Low Temperature Physics 199, 408–415, arXiv:1910.10199.

5) J. R. Stevens, N. F. Cothard, **E. M. Vavagiakis** et al. 2019. *Characterization of Transition Edge Sensors for the Simons Observatory*, Journal of Low Temperature Physics 199, 672–680, arXiv:1912.00860.

4) **E. M. Vavagiakis** et al. 2018. *Prime-Cam: A first-light instrument for the CCAT-prime telescope*, Proc. SPIE 10708:107081U, arXiv:1807.00058.

3) **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, 288–297, arXiv:1710.08456.

2) F. De Bernardis, S. Aiola, **E. M. Vavagiakis**, M. D. Niemack, N. Battaglia 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, 008, arXiv:1607.02139.

1) S. C. Parshley, **E. M. Vavagiakis**, T. Nikola, G. J. Stacey 2014. *A Miniature Cryogenic Scanning Fabry-Perot Interferometer for Mid-IR to Submm Astronomical Observations*, Proc. SPIE 9147:914745, DOI:10.1117/12.2057169.

In Submission

1) Z. Huber**, Y. Li, **E. M. Vavagiakis** et al. 2021. *The Simons Observatory: Magnetic Shielding Measurements for the Universal Multiplexing Module*, Submitted to the Journal of Low Temperature Physics.

**= Undergraduate student mentee, **= Graduate student mentee*

Presentations

Invited Talk, Kavli Institute for Particle Astrophysics & Cosmology Tea (Virtual)	2021
Invited Talk, CMB-S4 Collaboration Meeting (Virtual)	2021
Invited Talk, UC San Diego Cosmology Journal Club (Virtual)	2021
Talk, American Astronomical Society 238th Meeting (Virtual)	2021
Invited Talk, Max Planck Institute for Astrophysics Cosmology Seminar, Garching, Germany (Virtual)	2021
Invited Talk, CMB-S4 Collaboration Meeting (Virtual)	2021
Talk, Cornell University Astrophysics Lunch, Ithaca, NY (Virtual)	2021
Poster, Applied Superconductivity Conference (Virtual)	2020
Invited Colloquium, Wells College Science Colloquium, Aurora, NY	2019
Invited Talk, Tompkins Cortland Community College CollegeNow Professional Development Conference, Dryden, NY	2019
Selected Poster, Low Temperature Detectors Conference, Milan, Italy • Winner of Best Poster Video Award	2019
Poster, CMB-S4 Collaboration Meeting, Fermilab, IL	2019
Talk, SPIE Astronomical Telescopes + Instrumentation Conference, Austin, TX	2018
Talk, Center for Computational Astrophysics Cosmology Group Meeting, Flatiron Institute, New York, NY	2018
Invited Talk, St. Xavier's College, Kathmandu, Nepal (Virtual)	2018
Talk, Cornell University Galaxy Lunch, Ithaca, NY	2018
Talk, APS DPF Conference, Fermilab, IL	2017
Talk, Cornell University Summer STEM Colloquium, Ithaca, NY	2017
Talk, American Astronomical Society 230th Meeting, Austin, TX	2017
Talk, Cornell University Astrophysics Lunch, Ithaca, NY	2016
Poster, SPIE Astronomical Telescopes + Instrumentation Conference, Montreal, CA	2014

Mentorship

Rodrigo Freundt, Cornell Astronomy PhD student — 2021 – Present
Mod-Cam, Prime-Cam instrument module development

Ben Keller, Cornell Physics PhD student — 2021 – Present
Mod-Cam, Prime-Cam cryogenics and instrument module development

Zach Huber, Cornell Physics PhD student — 2020 – Present
Simons Observatory detector and readout testing; Mod-Cam, Prime-Cam development

Cody Duell, Cornell Physics PhD student — 2018 – Present
Detector and readout testing, cryogenics, instrumentation development

Photon Xu, Cornell Class of 2023 — 2021 – Present
Mod-Cam testing, cryogenic testbed development

Pedro Guicardi, Cornell Class of 2022 — 2019 – 2020
Supplemental website development for CMB Data Analysis Summer School Jupyter notebooks

Kshama Malavalli, Cornell Class of 2022 — 2019 – 2020
Cryogenic testbed development and testing, supplemental website development for CMB Data Analysis Summer School Jupyter notebooks

Dontae Milner, Simons-NSBP Scholar — Summer 2020
CMB Data Analysis Summer School Jupyter notebooks and supplemental website testing

Willow Martin, Cornell Class of 2022 — 2019 – 2020
Cryogenic testbed development and testing, mechanical design of testbed hardware

Noah Sailer, Cornell Class of 2019 — 2017 – 2019
Design and development of a cryogenic filter wheel test bed for Fourier Transform Spectrometry
- Physics graduate student at UC Berkeley

Kaiwen Zheng, Cornell Class of 2018 — 2016 – 2018
Magnetic shielding simulations and measurements, superconducting device testing, Python and Bash coding for lab testing automation
- Physics graduate student at Princeton University

Tracy Paltoo, LSAMP Program, Adelphi University — Summer 2016
Mechanical design of a magnetic shield for dilution refrigerator
- Project Analyst at a global civil engineering company

Prabudhya Bhattacharyya, Cornell Class of 2016 — 2015 – 2016
Mechanical design of a cryogenic testbed MiniTec support frame
- Physics graduate student at UC Berkeley

Service

Co-organizer, LEPP Journal Club, Cornell University — 2021 – Present
Organizing the weekly seminar for the Laboratory for Elementary-Particle Physics

Co-lead, Education and Public Engagement Working Group, Simons Obs. — 2020 – Present
Public event planning, social media management, educational resources

Physical Sciences Building Group Safety Representative, Cornell University — 2019 – 2021

Reviewer, *IEEE Transactions on Applied Superconductivity* — 2020

Organizer, Cosmology Journal Club, Cornell University — 2017 – 2019

Peer Reviewer, NSF GRFP Fellowship Review Sessions, Cornell University — 2015 – 2019

Panelist, NSF GRFP Information Sessions, Cornell University — 2017 – 2018

Panelist, Physics Graduate School Information Session, Cornell University — 2015

Teaching Experience

Cornell University

Grader, Physics 3318: Analytical Mechanics — Spring 2021
Grader, Physics 3317: Applications of Quantum Mechanics — Fall 2016 – 2020
Grader, Physics 6562: Statistical Mechanics — Spring 2020
Grader, Physics 7645: Particle Physics — Spring 2018 – 2019
Teaching Assistant, Physics 3314: Intermediate Mechanics — Spring 2016
Private Physics Tutor, Physics 1102: Electricity, Magnetism and Waves — Spring 2016
Teaching Assistant, Physics 1101: Mechanics and Thermodynamics — Fall 2015
Physics Tutor, Learning Strategies Center — 2012 – 2014
Undergraduate Teaching Assistant, Physics 1112: Mechanics — Spring 2011

California Institute of Technology

Teaching Assistant, Physics 1: Mechanics — Fall 2014

Training

APS-IDEA Simons Observatory Institutional Team — 2020 – Present
Developing strategic EDI goals for SO with the APS Inclusion, Diversity and Equity Alliance
APS-IDEA Workshops, Virtual — Spring, Fall 2021
NextGen Professors Program, Cornell University — 2019 – 2020
Selective career development program for students and postdocs dedicated to advancing EDI
Cornell Center for Teaching Innovation GET SET Workshops: — 2019
Writing a Teaching Statement, *Grading Effectively*, *Using a Case-Study Approach to Teaching*, *Digital Storytelling, Incorporating Experiential Learning in Your Classes*
Science Communication Workshop (COMM 5660), Cornell University — 2019
ComSciCon-Cornell, Cornell University — 2018
Selective science communication workshop
CMB Data Analysis Summer School, University of Michigan — 2016
Teaching and Learning Physics (PHYS 4484), Cornell University — 2011

Public Engagement

ParticleBites, the high energy physics reader's digest blog — 2016 – Present
- Co-director (2018 – Present): *Post coordination and editing, writer recruitment, content planning, social media management*
- Writer (2016 – 2018): *Summarizing recent particle physics and cosmology articles for an undergraduate level audience*

Member, Engagement, Mentorship, and Climate Committee, Simons Observatory — 2017 – Present
Lead role in Education and Public Engagement, Diversity and Inclusion initiatives
Social media: ACT, CCAT-prime, Simons Observatory, ParticleBites — 2017 – Present
Reaching a global audience of >100,000/month
Media interviews: Cornell Chronicle, WPRB 103.3 Princeton, WHCU 97.7 Ithaca, — 2017 – 2021
Tidbits of Research podcast
Science on Tap, Ithaca, NY: Public outreach talk, audience of 55 — 2019
Universal scales: Weighing tiny particles using the cosmos as a laboratory
Cornell University Xraise Outreach Program video development — 2017 – 2018
An introduction to the Cornell High Energy Synchrotron Source (CHESS)

Volunteer, Science Cabaret, Coltivare, Ithaca, NY 2017
Microwave physics demonstrations for the public
Panelist, Cosmology and Cocktails, Fleet Science Center, San Diego, CA 2017
Public event planned by the Simons Observatory EPE committee, audience of >200

K-12 Outreach

Creator, Organizer: Cosmology Day, Ithaca, NY 2019, 2021
Annual laboratory tour and interactive panel event for high school students, communicating real step-by-step paths from high school to STEM careers in physics, astronomy or engineering
Expanding Your Horizons Conference, Cornell University 2015 – 2021
One-day conference designed to stimulate 7^{th}-9^{th} grade girls' interest in STEM
- Conference Volunteer (2021)
- Physics Workshop Instructor (2019)
- Conference Buddy (2015)

Volunteer, Cornell Center for Materials Research Educational Programs 2015 – 2020
Educational programs and demonstrations for K-12 students, teachers, and the public
Tour Guide, Wilson Synchrotron Lab, CLASSE 2017 – 2019
Leading public tours of the Cornell synchrotron facility
Cornell STEM Teacher Workshop tour, Ithaca, NY 2018
Cosmology lecture at Ithaca High School, Ithaca, NY 2018
Looking back to the beginning: Experimental cosmology with ACT, Simons Observatory and CCAT-prime, audience of >30 students
Laboratory tour for New Settlement Housing Fund visiting students 2015
Focus For Teens Volunteer, Cornell University Department of Astronomy 2011, 2014
4-H STEM career exploration event for high school students
Physics Instructor, Northern Lights Learning Cooperative, Ithaca, NY Spring 2011

Groups and Advocacy

Volunteer, Student Disability Services, Cornell University 2015 – 2021
Advocacy for students with invisible disabilities
Member, Cornell Allergy and Asthma Awareness Club 2016 – 2017
Member, Caltech Graduate Student Council Advocacy Committee Fall 2014
Member, Society of Physics Students, Cornell University 2010 – 2014

Publications, Collaboration

57) T. Shin et al. (incl. **E. M. Vavagiakis**) 2021, *The mass and galaxy distribution around SZ-selected clusters*, MNRAS, 507, 4, DOI:10.1093/mnras/stab2505, arXiv:2105.05914.

56) J. Orlowski-Scherer, L. Di Mascolo, T. Bhandarkar, A. Manduca, T. Mroczkowski et al. (incl. **E. M. Vavagiakis**) 2021, *Atacama Cosmology Telescope measurements of a large sample of candidates from the Massive and Distant Clusters of WISE Survey: Sunyaev-Zeldovich effect confirmation of MaDCoWS candidates using ACT*, A&A 653, A135, DOI:10.1051/0004-6361/202141200, arXiv:2105.00068.

55) Y. Guan, S. E. Clark, B. S. Hensley, P. A. Gallardo, S. Naess, C. J. Duell et al. (incl. **E. M. Vavagiakis**) 2021, *The Atacama Cosmology Telescope: Microwave Intensity and Polarization Maps of the Galactic Center*, ApJ, 920, 6, DOI:10.3847/1538-4357/ac133f, arXiv:2105.05267.

54) Z. Xu et al. (incl. **E. M. Vavagiakis**) 2021, *The Simons Observatory: the Large Aperture Telescope (LAT)*, Res. Notes AAS 5 100, arXiv:2104.09511.

53) N. Zhu et al. (incl. **E. M. Vavagiakis**) 2021, *The Simons Observatory Large Aperture Telescope Receiver*, ApJS 256, 23, DOI:10.3847/1538-4365/ac0db7, arXiv:2103.02747.

52) S. Amodeo, N. Battaglia, E. Schaan, S. Ferraro, E. Moser et al. (incl. **E. M. Vavagiakis**) 2021. *The Atacama Cosmology Telescope: Modelling the Gas Thermodynamics in BOSS CMASS galaxies from Kinematic and Thermal Sunyaev-Zel'dovich Measurements*, Phys. Rev. D 103, 063514, DOI:10.1103/PhysRevD.103.063514, arXiv:2009.05558.

51) E. Schaan, S. Ferraro, S. Amodeo, N. Battaglia et al. (incl. **E. M. Vavagiakis**) 2021. *The Atacama Cosmology Telescope: Combined kinematic and thermal Sunyaev-Zel'dovich measurements from BOSS CMASS and LOWZ halo*, Phys. Rev. D 103, 063513, DOI:10.1103/PhysRevD.103.063513, arXiv:2009.05557.

50) Y. Li et al. (incl. **E. M. Vavagiakis**) 2021. *In situ Performance of the Low Frequency Array for Advanced ACTPol*, IEEE Transactions on Applied Superconductivity, 31 (5), DOI:10.1109/TASC.2021.3063334, arXiv:2101.02658.

49) M. Hilton et al. (incl. **E. M. Vavagiakis**) 2021. *The Atacama Cosmology Telescope: A Catalog of >4000 Sunyaev-Zel'dovich Galaxy Clusters*, ApJS 253 (1), DOI:10.3847/1538-4365/abd023, arXiv:2009.11043.

48) Z. Xu et al. (incl. **E. M. Vavagiakis**) 2020. *The Simons Observatory: the Large Aperture Telescope Receiver (LATR) integration and validation results*, Proc. SPIE. 11453:1145315, arXiv:2012.07862.

47) E. Healy et al. (incl. **E. M. Vavagiakis**) 2020. *Assembly development for the Simons Observatory focal plane readout module*, Proc. SPIE 11453:1145317, DOI:10.1117/12.2561743.

46) J. Seibert et al. (incl. **E. M. Vavagiakis**) 2020. *Development of an optical detector testbed for the Simons Observatory*, Proc. SPIE 11453:114532C, DOI:10.1117/12.2562045.

45) K. Harrington, C. Sierra, G. Chesmore, S. Sutariya et al. (incl. **E. M. Vavagiakis**) 2020. *The integration and testing program for the Simons Observatory Large Aperture Telescope optics tubes*, Proc. SPIE 11453:1145318, DOI:10.1117/12.2562647, arXiv:2102.02129.

44) D. Henke et al. (incl. **E. M. Vavagiakis**) 2020. *Optical design study for the 860 GHz first-light camera module of CCAT-p*, Proc. SPIE 11453:114532K, DOI:10.1117/12.2560695.

43) N. F. Cothard et al. (incl. **E. M. Vavagiakis**) 2020. *Comparing complex impedance and bias step measurements of Simons Observatory transition edge sensors*, Proc. SPIE 11453:1145325, arXiv:2012.08547.

42) M. S. Madhavacheril et al. (incl. **E. M. Vavagiakis**) 2020. *The Atacama Cosmology Telescope: Weighing distant clusters with the most ancient light*, ApJL 903, L13, arXiv:2009.07772.

41) CMB-S4 Collaboration (incl. **E. M. Vavagiakis**) 2020. *CMB-S4: Forecasting Constraints on Primordial Gravitational Waves*, arXiv:2008.12619.

40) S. Naess et al. (incl. **E. M. Vavagiakis**) 2020. *The Atacama Cosmology Telescope: arcminute-resolution maps of 18,000 square degrees of the microwave sky from ACT 2008-2018 data combined with Planck*, JCAP 2020, 046, arXiv:2007.07290.

39) S. K. Choi et al. (incl. **E. M. Vavagiakis**) 2020. *The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave Background Power Spectra at 98 and 150 GHz.* JCAP 2020, 045, arXiv:2007.07289.

38) S. Aiola et al. (incl. **E. M. Vavagiakis**) 2020. *The Atacama Cosmology Telescope: DR4 Maps and Cosmological Parameters*, JCAP 2020, 047, arXiv:2007.07288.

37) A. Suzuki et al. (incl. **E. M. Vavagiakis**) 2020. *Commercially Fabricated Antenna-Coupled Transition Edge Sensor Bolometer Detectors for Next-Generation Cosmic Microwave Background Polarimetry Experiment*, Journal of Low Temperature Physics 199, 1158–1166, arXiv:1912.12782.

36) M. S. Madhavacheril, J. C. Hill, S. Naess et al. (incl. **E. M. Vavagiakis**) 2019. *The Atacama Cosmology Telescope: Component-separated maps of CMB temperature and the thermal Sunyaev-Zel'dovich effect*, Phys.Rev.D 102 2, 023534, arXiv:1911.05717.

35) S. Choi et al. (incl. **E. M. Vavagiakis**) 2019. *Sensitivity of the Prime-Cam Instrument on the CCAT-prime Telescope*, Journal of Low Temperature Physics, arXiv:1908.10451.

34) N. F. Cothard et al. (incl. **E. M. Vavagiakis**) 2019. *The Design of The CCAT-Prime Epoch of Reionization Spectrometer Instrument*, Journal of Low Temperature Physics, arXiv:1911.11687.

33) M. S. Rao, M. Silva-Feaver et al. (incl. **E. M. Vavagiakis**) 2019. *Simons Observatory Microwave SQUID Multiplexing Readout - Cryogenic RF Amplifier and Coax Chain Design*, Journal of Low Temperature Physics 199, 807-816, arXiv:2003.08949.

32) Y. Li et al. (incl. **E. M. Vavagiakis**) 2019. *Assembly and Integration Process for the High-Density Detector Array Readout Modules for the Simons Observatory*, Journal of Low Temperature Physics 199, 985-993, DOI:10.1007/s10909-020-02386-6.

31) The Simons Observatory Collaboration (incl. **E. M. Vavagiakis**) 2019. *The Simons Observatory: Astro2020 Decadal Project Whitepaper*, Astro2020 Decadal Project White Paper, arXiv:1907.08284.

30) K. Basu et al. (incl. **E. M. Vavagiakis**) 2019. *"SZ spectroscopy" in the coming decade: Galaxy cluster cosmology and astrophysics in the submillimeter*, Astro2020 Decadal Project White Paper, arXiv:1903.04944.

29) The CCAT-prime Collaboration (incl. **E. M. Vavagiakis**) 2019. *The CCAT-Prime Submillimeter Observatory*, Astro2020 APC White Paper, arXiv:1909.02587.

28) The Simons Observatory Collaboration (incl. **E. M. Vavagiakis**) 2018. *The Simons Observatory: Science goals and forecasts*, Journal of Cosmology and Astroparticle Physics 1902, 056, arXiv:1808.07445.

27) G. Coppi, Z. Xu, et al. (incl. **E. M. Vavagiakis**) 2018. *Cooldown strategies and transient thermal simulations for the Simons Observatory*, Proc. SPIE 10708, arXiv:1808.07896.

26) N. F. Cothard et al. (incl. **E. M. Vavagiakis**) 2018. *Optimizing the efficiency of Fabry-Perot interferometers with silicon-substrate mirrors*, Proc. SPIE 10706, arXiv:1807.06019.

25) S. R. Dicker, P. A. Gallardo, P. D. Mauskopf, J. E. Gudmudsson, et al. (incl. **E. M. Vavagiakis**) 2018. *Cold optical design for the large aperture Simons' Observatory telescope*, Proc. SPIE 10700, arXiv:1808.05058.

24) P. A. Gallardo, J. Gudmundsson, B. J. Koopman, F. T. Matsuda, S. M. Simon, et al. (incl. **E. M. Vavagiakis**) 2018. *Systematic uncertainties in the Simons Observatory: optical effects and sensitivity considerations*, Proc. SPIE 10708, arXiv:1808.05152.

23) J. L. Orlowski-Scherer, N. Zhu, Z. Xu et al. (incl. **E. M. Vavagiakis**) 2018. *Simons Observatory large aperture receiver simulation overview*, Proc. SPIE 10708, arXiv:1808.06648.

22) S. C. Parshley, M. D. Niemack, R. Hills, S. R. Dicker et al. (incl. **E. M. Vavagiakis**) 2018. *The optical design of the six-meter CCAT-prime and Simons Observatory telescopes*, Proc. SPIE 10700, arXiv:1807.06678.

21) S. C. Parshley, J. Kronshage, et al. (incl. **E. M. Vavagiakis**) 2018. *CCAT-prime: a novel telescope for sub-millimeter astronomy*, Proc. SPIE 10700, arXiv:1807.06675.

20) G. J. Stacey et al. (incl. **E. M. Vavagiakis**) 2018. *CCAT-Prime: science with an ultra-widefield submillimeter observatory on Cerro Chajnantor*, Proc. SPIE 10700, arXiv:1807.04354.

19) J. R. Stevens, N. Goeckner-Wald, R. Keskitalo, N. McCallum, et al. (incl. **E. M. Vavagiakis**) 2018. *Designs for next generation CMB survey strategies from Chile*, Proc. SPIE 10708, arXiv:1808.05131.

18) N. Zhu, J. L. Orlowski-Scherer, Z. Xu, et al. (incl. **E. M. Vavagiakis**) 2018. *Simons Observatory large aperture telescope receiver design overview*, Proc. SPIE 10708, arXiv:1808.10037.

17) K. T. Crowley et al. (incl. **E. M. Vavagiakis**) 2018. *Advanced ACTPol TES Device Parameters and Noise Performance in Fielded Arrays*, Journal of Low Temperature Physics 193, 328-336, arXiv:1807.07496.

16) B. Koopman, N. F. Cothard, S. K. Choi, et al. (incl. **E. M. Vavagiakis**) 2018. *Advanced ACTPol Low Frequency Array: Readout and Characterization of Prototype 27 and 39 GHz Transition Edge Sensors*, Journal of Low Temperature Physics, arXiv:1711.02594.

15) S. M. Simon et al. (incl. **E. M. Vavagiakis**) 2018. *The Advanced ACTPol 27/39 GHz Array*, Journal of Low Temperature Physics 193, 1041–1047, DOI:10.1007/s10909-018-1963-7.

14) M. Hilton, M. Hasselfield, C. Sifon, N. Battaglia, et al. (incl. **E. M. Vavagiakis**) 2018. *The Atacama Cosmology Telescope: The Two-Season ACTPol Sunyaev-Zel'Dovich Effect Selected Cluster Catalog,* The Astrophysical Journal Supplement Series, 235, 1. arXiv:1709.05600.

13) B. D. Sherwin, A. van Engelen, N. Sehgal, M. Madhavacheril et al. (incl. **E. M. Vavagiakis**) 2017. *The Atacama Cosmology Telescope: Two-Season ACTPol Lensing Power Spectrum,* Physical Review D 95, 123529, arXiv:1611.09753.

12) S. P. Ho et al. (incl. **E. M. Vavagiakis**) 2017 *Highly uniform 150 mm diameter multichroic polarimeter array deployed for CMB detection*, Proc. SPIE 9914:991418, DOI:10.1117/12.2233113.

11) Y. Li, S. Choi, S. P. Ho, et al. (incl. **E. M. Vavagiakis**) 2016. *Assembly and integration process of the first high density detector array for the Atacama Cosmology Telescope*, Proc. SPIE 9914:991435. DOI:10.1117/12.2233470.

10) S. M. Simon et al. (incl. **E. M. Vavagiakis**) 2016. *The design and characterization of wideband spline-profiled feedhorns for Advanced ACTPol*, Proc. SPIE 9914:991416, DOI:10.1117/12.2233603.

9) F. De Bernardis, J. R. Stevens, M. Hasselfield, et al. (incl. **E. M. Vavagiakis**) 2016. *Survey strategy optimization for the Atacama Cosmology Telescope*, Proc. SPIE 9910:991014, arXiv:1607.02120.

8) J. Ward et al. (incl. **E. M. Vavagiakis**) 2016. *Mechanical design and development of TES bolometer detector arrays for the Advanced ACTPol experiment*, Proc. SPIE 9914, arXiv:1607.05754.

7) S. W. Henderson, J. R. Stevens et al. (incl. **E. M. Vavagiakis**) 2016. *Readout of two-kilopixel transition-edge sensor arrays for Advanced ACTPol*, Proc. SPIE 9914:99141G, arXiv:1607.06064.

6) B. Koopman, J. Austermann, H.-M. Cho, et al. (incl. **E. M. Vavagiakis**) 2016. *Optical modeling and polarization calibration for CMB measurements with ACTPol and Advanced ACTPol*, Proc. SPIE 9914:99142T, arXiv:1607.01825.

5) S. P. Ho, C. G. Pappas et al. (incl. **E. M. Vavagiakis**) 2016. *The First Multichroic Polarimeter Array on the Atacama Cosmology Telescope: Characterization and Performance*, Journal of Low Temperature Physics 184:3, 559-567. DOI:10.1007/s10909-016-1573-1.

4) S. W. Henderson et al. (incl. **E. M. Vavagiakis**) 2016. *Advanced ACTPol Cryogenic Detector Arrays and Readout*, Journal of Low Temperature Physics 10909:1575-z, arXiv:1510.02809.

3) S. M. Duff et al. (incl. **E. M. Vavagiakis**) 2016. *Advanced ACTPol Multichroic Polarimeter Array Fabrication Process for 150 mm Wafers*, Journal of Low Temperature Physics 10909:1576-y, DOI:10.1007/s10909-016-1576-y.

2) R. Datta et al. (incl. **E. M. Vavagiakis**) 2016. *Design and Deployment of a Multichroic Polarimeter Array on the Atacama Cosmology Telescope*, Journal of Low Temperature Physics 10909:1553-5, arXiv:1510.07797.

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Other Works

E. M. Vavagiakis, T. C. Bachlechner, M. Kleban, *Is the electric potential physical?*, Physics Today 74 (8), 62 (2021) DOI:10.1063/PT.3.4822.

Forthcoming series of illustrated children's books highlighting modern experiments:

E. M. Vavagiakis, *I'm a Photon*, MIT Kids Press, Spring 2024.
E. M. Vavagiakis, *I'm a Black Hole* (J. Lanan, Illus.), MIT Kids Press, Spring 2023.
E. M. Vavagiakis, *I'm a Neutrino* (I. Lemesis, Illus.), MIT Kids Press, Spring 2022.