

# James Colin Hill

## Curriculum Vitae

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USA

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CITIZENSHIP USA  
Canada

RESEARCH INTERESTS Theoretical Cosmology and Data Analysis: Cosmic Microwave Background;  
Large-Scale Structure; Galaxy Clusters; Sunyaev-Zel'dovich Effect; Gravitational Lensing; Cosmological Tests of Fundamental Physics

EDUCATION **Princeton University** 2009 - 2014  
Princeton, NJ  
Ph.D. (2014), M.A. (2011), Astrophysical Sciences  
Thesis: *Constraints on Cosmology and the Physics of the Intracluster Medium from Secondary Anisotropies in the Cosmic Microwave Background*  
Thesis Advisor: David N. Spergel

**University of Cambridge** 2008 - 2009  
Cambridge, UK  
M.ASt. / Certificate of Advanced Study in Mathematics with Distinction (2009)  
Advisors: Anthony Challinor, Paul Shellard

**Massachusetts Institute of Technology (MIT)** 2004 - 2008  
Cambridge, MA  
S.B. Physics, S.B. Mathematics (2008)  
Thesis: *Cosmological Constraints from the Virial Mass Function of Nearby Galaxy Groups and Clusters*  
Thesis Advisors: Claude Canizares, Kenneth Rines (CfA)

POSITIONS HELD	<p><b>Assistant Professor, Department of Physics</b> 2019 - Present Columbia University, New York, NY</p> <p><b>Associate Research Scientist, Center for Computational Astrophysics (CCA)</b> 2019 - 2022 Flatiron Institute, Simons Foundation, New York, NY</p> <p><b>Member, Institute for Advanced Study (IAS)</b> 2017 - 2019 <b>Flatiron Fellow, CCA</b> Joint postdoctoral fellowship IAS, Princeton, NJ Flatiron Institute, Simons Foundation, New York, NY</p> <p><b>Consultant, CCA</b> Summer 2017 Flatiron Institute, Simons Foundation, New York, NY</p> <p><b>Junior Fellow, Simons Society of Fellows</b> 2014 - 2017 Columbia University, New York, NY Faculty Contact: Zoltán Haiman Postdoctoral fellowship funded by the Simons Foundation</p> <p><b>Harvard-Smithsonian Center for Astrophysics (CfA)</b> 2007 - 2008 Cambridge, MA Advisor: Kenneth Rines NSF REU summer intern</p> <p><b>MIT</b> 2006 - 2007 Cambridge, MA Advisor: Max Tegmark Research assistant in cosmology at MIT Kavli Institute for Astrophysics &amp; Space Research (MKI) [through MIT Undergraduate Research Opportunities Program (UROP)]</p> <p><b>MIT</b> 2005 Cambridge, MA Advisor: Scott Hughes Summer research assistant in gravitational wave analysis at MKI [through MIT UROP]</p>
AWARDS	<p>Enseignant Chercheur Invité (Université Paris Diderot) March 2016</p> <p>Junior Fellow, Simons Society of Fellows 2014-17</p> <p>R.A. Watchman Prize for Part III Mathematics 2009</p> <p>Foundation Scholarship (Jesus College, Cambridge) 2009</p> <p>NSF Graduate Research Fellowship 2008-11</p> <p>Barrett Award for Research in Astrophysics (MIT) 2008</p> <p>Orloff Award for Service in Physics (MIT) 2008</p>

Phi Beta Kappa	2008
Sigma Pi Sigma	2008
Rhodes Scholarship Finalist	2007
Paul E. Gray UROP Researcher (MIT)	2005
United States Presidential Scholar	2004
National Merit Scholar	2004-8
Robert C. Byrd Honors Scholar	2004

## GRANTS

**NSF AST-2108536** (PI; Awarded 8/27/21; Award: \$483,459): “Illuminating Galaxy Formation with the Atacama Cosmology Telescope”

**Columbia University Lenfest Junior Faculty Development Grant** (PI; Awarded 7/10/20): “Sweeping Away Cosmic Dust with the Atacama Cosmology Telescope”

**Jet Propulsion Laboratory Strategic Research & Technical Development Program Grant** (Co-I; Awarded 9/27/18; Award: \$262,000): “Mapping the Baryonic Majority: Comprehensive Multi-Mission Analysis of the Circumgalactic Medium and the Intergalactic Medium”

**NASA 17-ATP17-0048** (Collaborator; Awarded 2/2/18; Award: \$614,196): “Realizing the Full Potential of Weak Lensing Cosmology”

**NSF AST-1311756** (Collaborator; Awarded 9/9/13; Award: \$539,488): “Combining Thermal SZ and Gravitational Lensing Measurements: A Novel Approach to Measuring the Amplitude of Matter Fluctuations”

## PUBLICATIONS **First- or second-author papers:**

(\* INDICATES  
A STUDENT  
PROJECT FOR  
WHICH I WAS  
THE PRIMARY  
SUPERVISOR)

1. **J. C. Hill**, E. Calabrese, et al. “The Atacama Cosmology Telescope: Constraints on Pre-Recombination Early Dark Energy” (2021). *Phys. Rev. D* submitted, [arXiv:2109.04451](https://arxiv.org/abs/2109.04451) [[astro-ph.CO](https://arxiv.org/abs/2109.04451)].
2. \* F. McCarthy, **J. C. Hill**, and M. S. Madhavacheril. “Baryonic feedback biases on fundamental physics from lensed CMB power spectra” (2021). *Phys. Rev. D* submitted, [arXiv:2103.05582](https://arxiv.org/abs/2103.05582) [[astro-ph.CO](https://arxiv.org/abs/2103.05582)].
3. \* L. Thiele, **J. C. Hill**, and K. M. Smith. “Accurate Analytic Model for the Weak Lensing Convergence One-Point Probability Distribution Function and its Auto-Covariance” (2020). *Phys. Rev. D*, 102, 123545, [arXiv:2009.06547](https://arxiv.org/abs/2009.06547) [[astro-ph.CO](https://arxiv.org/abs/2009.06547)].
4. **J. C. Hill**, E. McDonough, M. W. Toomey, and S. Alexander. “Early Dark Energy Does Not Restore Cosmological Concordance” (2020). *Phys. Rev. D*, 102, 043507, [arXiv:2003.07355](https://arxiv.org/abs/2003.07355) [[astro-ph.CO](https://arxiv.org/abs/2003.07355)].  
—Highlighted as *Phys. Rev. D* Editors’ Suggestion

5. M. S. Madhavacheril, **J. C. Hill**, S. Naess, et al. “The Atacama Cosmology Telescope: Component-separated maps of CMB temperature and the thermal Sunyaev-Zel’dovich effect” (2020). *Phys. Rev. D*, 102, 023534, arXiv:1911.05717 [astro-ph.CO].
6. M. H. Abitbol, **J. C. Hill**, and J. Chluba. “Measuring the Hubble constant from the cooling of the CMB monopole” (2020). *ApJ*, 893, 1, arXiv:1910.09881 [astro-ph.CO].
7. \* L. Thiele, **J. C. Hill**, and K. M. Smith. “An Accurate Analytic Model for the Thermal Sunyaev-Zel’dovich One-Point PDF” (2019). *Phys. Rev. D*, 99, 103511, arXiv:1812.05584 [astro-ph.CO].
8. **J. C. Hill**. “Foreground Biases on Primordial Non-Gaussianity Measurements from the CMB Temperature Bispectrum: Implications for *Planck* and Beyond” (2018). *Phys. Rev. D*, 98, 083542, arXiv:1807.07324 [astro-ph.CO].
9. **J. C. Hill** and E. J. Baxter. “Can Early Dark Energy Explain EDGES?” (2018). *JCAP*, 08, 037, arXiv:1803.07555 [astro-ph.CO].
10. M. S. Madhavacheril and **J. C. Hill**. “Mitigating Foreground Biases in CMB Lensing Reconstruction Using Cleaned Gradients” (2018). *Phys. Rev. D*, 98, 023534, arXiv:1802.08230 [astro-ph.CO].
11. D. Alonso, **J. C. Hill**, R. Hlozek, and D. N. Spergel. “Measurement of the thermal Sunyaev-Zel’dovich effect around cosmic voids” (2018). *Phys. Rev. D*, 97, 063514, arXiv:1709.01489 [astro-ph.CO].  
—Highlighted as *Phys. Rev. D* Editors’ Suggestion
12. **J. C. Hill**, E. J. Baxter, A. Lidz, J. P. Greco, and B. Jain. “The Two-Halo Term in Stacked Thermal Sunyaev-Zel’dovich Measurements: Implications for Self-Similarity” (2018). *Phys. Rev. D*, 97, 083501, arXiv:1706.03753 [astro-ph.CO].
13. S. Ferraro and **J. C. Hill**. “Bias to CMB Lensing Reconstruction from Temperature Anisotropies due to Large-Scale Galaxy Motions” (2018). *Phys. Rev. D*, 97, 023512, arXiv:1705.06751 [astro-ph.CO].
14. \* B. Yu, **J. C. Hill**, and B. D. Sherwin. “Multi-tracer CMB delensing maps from *Planck* and *WISE* data” (2017). *Phys. Rev. D*, 96, 123511, arXiv:1705.02332 [astro-ph.CO].
15. J. Chluba, **J. C. Hill**, and M. H. Abitbol. “Rethinking CMB foregrounds: systematic extension of foreground parameterizations” (2017). *MNRAS*, 472, 1195, arXiv:1701.00274 [astro-ph.CO].
16. \* J. Liu, **J. C. Hill**, B. D. Sherwin, A. Petri, V. Böhm, and Z. Haiman. “CMB Lensing Beyond the Power Spectrum: Cosmological Constraints from the One-Point PDF and Peak Counts” (2016). *Phys. Rev. D*, 94, 103501, arXiv:1608.03169 [astro-ph.CO].

17. S. Ferraro, **J. C. Hill**, N. Battaglia, J. Liu, and D. N. Spergel. “The Kinematic Sunyaev-Zel’dovich Effect with Projected Fields II: Prospects, Challenges, and Comparison with Simulations” (2016). *Phys. Rev. D*, 94, 123526, arXiv:1605.02722 [astro-ph.CO].  
—Highlighted as *Phys. Rev. D* Editors’ Suggestion
18. **J. C. Hill**, S. Ferraro, N. Battaglia, J. Liu, and D. N. Spergel. “The Kinematic Sunyaev-Zel’dovich Effect with Projected Fields: A Novel Probe of the Baryon Distribution with *Planck*, *WMAP*, and *WISE* Data” (2016). *Phys. Rev. Lett.*, 117, 051301, arXiv:1603.01608 [astro-ph.CO].
19. \* M. H. Abitbol, **J. C. Hill**, and B. R. Johnson. “Foreground-Induced Biases in CMB Polarimeter Self-Calibration” (2016). *MNRAS*, 457, 1796, arXiv:1512.06834 [astro-ph.CO].
20. \* S. E. Clark, **J. C. Hill**, J. E. G. Peek, M. E. Putman, and B. L. Babler. “Neutral hydrogen structures trace dust polarization angle: Implications for cosmic microwave background foregrounds” (2015). *Phys. Rev. Lett.*, 115, 241302, arXiv:1508.07005 [astro-ph.CO].  
—Highlighted as *Phys. Rev. Lett.* Editors’ Suggestion
21. **J. C. Hill**, N. Battaglia, J. Chluba, S. Ferraro, E. Schaun, and D. N. Spergel. “Taking the Universe’s Temperature with Spectral Distortions of the Cosmic Microwave Background” (2015). *Phys. Rev. Lett.*, 115, 261301, arXiv:1507.01583 [astro-ph.CO].
22. \* J. Liu and **J. C. Hill**. “Cross-Correlation of Planck CMB Lensing and CFHTLenS Galaxy Weak Lensing Maps” (2015). *Phys. Rev. D*, 92, 063517, arXiv:1504.05598 [astro-ph.CO].
23. N. Battaglia, **J. C. Hill**, and N. Murray. “Deconstructing Thermal Sunyaev-Zel’dovich – Gravitational Lensing Cross-Correlations: Implications for the Intracluster Medium” (2015). *ApJ*, 812, 154, arXiv:1412.5593 [astro-ph.CO].
24. **J. C. Hill**, B. D. Sherwin, K. M. Smith, et al. “The Atacama Cosmology Telescope: A Measurement of the Thermal Sunyaev-Zel’dovich One-Point Probability Distribution Function” (2014). *Phys. Rev. D* submitted, arXiv:1411.8004 [astro-ph.CO].
25. \* J. P. Greco, **J. C. Hill**, D. N. Spergel, and N. Battaglia. “The Stacked Thermal Sunyaev-Zel’dovich Signal of Locally Brightest Galaxies in Planck Full Mission Data: Evidence for Galaxy Feedback?” (2015). *ApJ*, 808, 151, arXiv:1409.6747 [astro-ph.CO].
26. R. Flauger, **J. C. Hill**, and D. N. Spergel. “Toward an Understanding of Foreground Emission in the BICEP2 Region” (2014). *JCAP*, 08, 039, arXiv:1405.7351 [astro-ph.CO].

27. **J. C. Hill** and D. N. Spergel. “Detection of Thermal SZ – CMB Lensing Cross-Correlation in Planck Nominal Mission Data” (2014). *JCAP*, 02, 030, [arXiv:1312.4525](#) [[astro-ph.CO](#)].
28. **J. C. Hill** and E. Pajer. “Cosmology from the Thermal Sunyaev-Zel’dovich Power Spectrum: Primordial non-Gaussianity and Massive Neutrinos” (2013). *Phys. Rev. D*, 88, 063526, [arXiv:1303.4726](#) [[astro-ph.CO](#)].
29. **J. C. Hill** and B. D. Sherwin. “Cosmological Constraints from Moments of the Thermal Sunyaev-Zel’dovich Effect” (2013). *Phys. Rev. D*, 87, 023527, [arXiv:1205.5794](#) [[astro-ph.CO](#)].

**Co-led papers with significant contribution:**

1. S. Pandey, M. Gatti, E. Baxter, **J. C. Hill**, et al. “Cross-correlation of DES Y3 lensing and ACT/Planck thermal Sunyaev Zel’dovich Effect II: Modeling and constraints on halo pressure profiles” (2021). *Phys. Rev. D* submitted, [arXiv:2108.01601](#) [[astro-ph.CO](#)].
2. M. Gatti, S. Pandey, E. Baxter, **J. C. Hill**, et al. “Cross-correlation of DES Y3 lensing and ACT/Planck thermal Sunyaev Zel’dovich Effect I: Measurements, systematics tests, and feedback model constraints” (2021). *Phys. Rev. D* submitted, [arXiv:2108.01600](#) [[astro-ph.CO](#)].
3. \* L. Thiele, Y. Guan, **J. C. Hill**, A. Kosowsky, and D. N. Spergel. “Can small-scale baryon inhomogeneities resolve the Hubble tension? An investigation with ACT DR4” (2021). *Phys. Rev. D*, 104, 063535, [arXiv:2105.03003](#) [[astro-ph.CO](#)].
4. S. E. Clark, C.-G. Kim, **J. C. Hill**, and B. S. Hensley. “The Origin of Parity Violation in Polarized Dust Emission and Implications for Cosmic Birefringence” (2021). *ApJ*, 919, 53, [arXiv:2105.00120](#) [[astro-ph.GA](#)].
5. \* A. Kusiak, B. Bolliet, S. Ferraro, **J. C. Hill**, and A. Krolewski. “Constraining the Baryon Abundance with the Kinematic Sunyaev-Zel’dovich Effect: Projected-Field Detection Using Planck, WMAP, and unWISE” (2021). *Phys. Rev. D*, 104, 043518, [arXiv:2102.01068](#) [[astro-ph.CO](#)].
6. \* Y. S. Abylkairov, O. Darwish, **J. C. Hill**, and B. D. Sherwin. “Partially Constrained Internal Linear Combination: a method for low-noise CMB foreground mitigation” (2020). *Phys. Rev. D*, 103, 103510, [arXiv:2012.04032](#) [[astro-ph.CO](#)].
7. M. M. Ivanov, E. McDonough, **J. C. Hill**, M. Simonovic, M. W. Toomey, S. Alexander, and M. Zaldarriaga. “Constraining Early Dark Energy with Large-Scale Structure” (2020). *Phys. Rev. D*, 102, 103502, [arXiv:2006.11235](#) [[astro-ph.CO](#)].

8. M. A. Alvarez, S. Ferraro, **J. C. Hill**, R. Hlozek, and M. Ikape. “Mitigating the optical depth degeneracy using the kinematic Sunyaev-Zel’dovich effect with CMB-S4” (2021). *Phys. Rev. D*, 103, 063518, [arXiv:2006.06594 \[astro-ph.CO\]](#).
9. \* S. Pandey, E. J. Baxter, and **J. C. Hill**. “Constraining the properties of gaseous halos via cross-correlations of upcoming galaxy surveys and thermal Sunyaev-Zel’dovich maps” (2020). *Phys. Rev. D*, 101, 043525, [arXiv:1909.00405 \[astro-ph.CO\]](#).
10. The Simons Observatory Collaboration: P. Ade, ..., **J. C. Hill**, et al. “The Simons Observatory: Science Goals and Forecasts” (2019). *JCAP*, 02, 056, [arXiv:1808.07445 \[astro-ph.CO\]](#).
11. \* M. H. Abitbol, J. Chluba, **J. C. Hill**, and B. R. Johnson. “Prospects for Measuring Cosmic Microwave Background Spectral Distortions in the Presence of Foregrounds” (2017). *MNRAS*, 471, 1126, [arXiv:1705.01534 \[astro-ph.CO\]](#).
12. \* J. Liu, A. Ortiz-Vazquez, and **J. C. Hill**. “Constraining Multiplicative Bias in CFHTLenS Weak Lensing Shear Data” (2016). *Phys. Rev. D*, 93, 103508, [arXiv:1601.05720 \[astro-ph.CO\]](#).
13. M. J. Wilson, B. D. Sherwin, **J. C. Hill**, et al. “The Atacama Cosmology Telescope: A Measurement of the Thermal Sunyaev-Zel’dovich Effect Using the Skewness of the CMB Temperature Distribution,” (2012). *Phys. Rev. D*, 86, 122005, [arXiv:1203.6633 \[astro-ph.CO\]](#).
14. M. E. C. Swanson, M. Tegmark, A. J. S. Hamilton, and **J. C. Hill**. “Methods for Rapidly Processing Angular Masks of Next-Generation Galaxy Surveys” (2008). *MNRAS*, 387, 1391, [arXiv:0711.4352 \[astro-ph\]](#).

#### Other co-authored papers:

1. M. Lokken, et al. “Superclustering with the Atacama Cosmology Telescope and Dark Energy Survey: I. Evidence for thermal energy anisotropy using oriented stacking” (2021). *ApJ* submitted, [arXiv:2107.05523 \[astro-ph.CO\]](#).
2. A. Hincks, et al. “A high-resolution view of the filament of gas between Abell 399 and Abell 401 from the Atacama Cosmology Telescope and MUSTANG-2” (2021). *MNRAS* submitted, [arXiv:2107.04611 \[astro-ph.CO\]](#).
3. T. Shin, et al. “The mass and galaxy distribution around SZ-selected clusters” (2021). *MNRAS* submitted, [arXiv:2105.05914 \[astro-ph.CO\]](#).
4. S. K. Naess, et al. “The Atacama Cosmology Telescope: A Search for Planet 9” (2021). *ApJ* submitted, [arXiv:2104.10264 \[astro-ph.EP\]](#).

5. M. Mallaby-Kay, et al. “The Atacama Cosmology Telescope: Summary of DR4 and DR5 Data Products and Data Access” (2021). *ApJS*, 255, 11, [arXiv:2103.03154 \[astro-ph.CO\]](#).
6. V. Calafut, et al. “The Atacama Cosmology Telescope: Detection of the Pairwise Kinematic Sunyaev-Zel’dovich Effect with SDSS DR15 Galaxies” (2021). *Phys. Rev. D*, 104, 043502, [arXiv:2101.08374 \[astro-ph.CO\]](#).
7. E. M. Vavagiakis, et al. “The Atacama Cosmology Telescope: Probing the Baryon Content of SDSS DR15 Galaxies with the Thermal and Kinematic Sunyaev-Zel’dovich Effects” (2021). *Phys. Rev. D*, 104, 043503, [arXiv:2101.08373 \[astro-ph.CO\]](#).
8. S. K. Naess, et al. “The Atacama Cosmology Telescope: Detection of mm-wave transient sources” (2021). *ApJ*, 915, 14, [arXiv:2012.14347 \[astro-ph.CO\]](#).
9. N. C. Robertson, et al. “Strong detection of the CMB lensing and galaxy weak lensing cross-correlation from ACT-DR4, Planck Legacy, and KiDS-1000” (2021). *A&A*, 649, A146, [arXiv:2011.11613 \[astro-ph.CO\]](#).
10. M. H. Abitbol, et al. “The Simons Observatory: Bandpass and polarization-angle calibration requirements for B-mode searches” (2021). *JCAP*, 05, 032, [arXiv:2011.02449 \[astro-ph.CO\]](#).
11. M. Hilton, et al. “The Atacama Cosmology Telescope: A Catalog of > 4000 Sunyaev-Zel’dovich Galaxy Clusters” (2020). *ApJS*, 253, 3, [arXiv:2009.11043 \[astro-ph.CO\]](#).
12. M. S. Madhavacheril, et al. “The Atacama Cosmology Telescope: Weighing distant clusters with the most ancient light” (2020). *ApJL*, 903, L13, [arXiv:2009.07772 \[astro-ph.CO\]](#).
13. S. Amodeo, et al. “The Atacama Cosmology Telescope: Modelling the Gas Thermodynamics in BOSS CMASS galaxies from Kinematic and Thermal Sunyaev-Zel’dovich Measurements” (2020). *Phys. Rev. D*, 103, 063514, [arXiv:2009.05558 \[astro-ph.CO\]](#).
14. E. Schaan, et al. “The Atacama Cosmology Telescope: Combined kinematic and thermal Sunyaev-Zel’dovich measurements from BOSS CMASS and LOWZ halos” (2020). *Phys. Rev. D*, 103, 063513, [arXiv:2009.05557 \[astro-ph.CO\]](#).
15. The CMB-S4 Collaboration, et al. “CMB-S4: Forecasting Constraints on Primordial Gravitational Waves” (2020). *ApJ* in press, [arXiv:2008.12619 \[astro-ph.CO\]](#).
16. S. Adhikari, et al. “Probing galaxy evolution in massive clusters using ACT and DES: splashback as a cosmic clock” (2020). *ApJ* submitted, [arXiv:2008.11663 \[astro-ph.CO\]](#).



17. G. A. Marques, J. Liu, K. M. Huffenberger, and **J. C. Hill**. “Cross-correlation between Subaru Hyper Suprime-Cam Galaxy Weak Lensing and Planck Cosmic Microwave Background Lensing” (2020). *ApJ*, 904, 182, [arXiv:2008.04369](#) [[astro-ph.CO](#)].
18. D. Han, et al. “The Atacama Cosmology Telescope: Delensed Power Spectra and Parameters” (2021). *JCAP*, 01, 031, [arXiv:2007.14405](#) [[astro-ph.CO](#)].
19. S. Aiola, et al. “The Atacama Cosmology Telescope: DR4 Maps and Cosmological Parameters” (2020). *JCAP*, 12, 047, [arXiv:2007.07288](#) [[astro-ph.CO](#)].
20. S. K. Choi, et al. “The Atacama Cosmology Telescope: A Measurement of the Cosmic Microwave Background Power Spectra at 98 and 150 GHz” (2020). *JCAP*, 12, 045, [arXiv:2007.07289](#) [[astro-ph.CO](#)].
21. S. Naess, et al. “The Atacama Cosmology Telescope: arcminute-resolution maps of 18,000 square degrees of the microwave sky from ACT 2008-2018 data combined with Planck” (2020). *JCAP*, 12, 046, [arXiv:2007.07290](#) [[astro-ph.CO](#)].
22. O. Darwish, et al. “The Atacama Cosmology Telescope: A CMB lensing mass map over 2100 square degrees of sky and its cross-correlation with BOSS-CMASS galaxies” (2021). *MNRAS*, 500, 2250, [arXiv:2004.01139](#) [[astro-ph.CO](#)].
23. K. R. Hall, et al. “Quantifying the Thermal Sunyaev-Zel’dovich Effect and Excess Millimeter Emission in Quasar Environments” (2019). *MNRAS*, 490, 2315, [arXiv:1907.11731](#) [[astro-ph.GA](#)].
24. The CMB-S4 Collaboration: K. Abazajian, . . . , **J. C. Hill**, et al. “CMB-S4 Science Case, Reference Design, and Project Plan” (2019). [arXiv:1907.04473](#) [[astro-ph.CO](#)].
25. B. Thorne, et al. “Removal of Galactic foregrounds for the Simons Observatory primordial gravitational wave search” (2019). *Phys. Rev. D* submitted, [arXiv:1905.08888](#) [[astro-ph.CO](#)].
26. S. Pandey, et al. “Constraints on the redshift evolution of astrophysical feedback with Sunyaev-Zeldovich effect cross-correlations” (2019). *Phys. Rev. D*, 100, 063519, [arXiv:1904.13347](#) [[astro-ph.CO](#)].
27. S. Hanany, et al. “PICO: Probe of Inflation and Cosmic Origins” (2019). *NASA Probe Class Mission Study*, [arXiv:1902.10541](#) [[astro-ph.IM](#)].
28. T. Shin, et al. “Measurement of the Splashback Feature around SZ-selected Galaxy Clusters with DES, SPT and ACT” (2019). *MNRAS*, 487, 2900, [arXiv:1811.06081](#) [[astro-ph.CO](#)].
29. V. Böhm, B. D. Sherwin, J. Liu, **J. C. Hill**, M. Schmittfull, and T. Namikawa. “On the effect of non-Gaussian lensing deflections on CMB

- lensing measurements” (2018). *Phys. Rev. D*, 98, 123510, arXiv:1806.01157 [astro-ph.CO].
30. H. Miyatake, et al. “Weak-Lensing Mass Calibration of ACTPol Sunyaev-Zel’dovich Clusters with the Hyper Suprime-Cam Survey” (2019). *ApJ*, 875, 63, arXiv:1804.05873 [astro-ph.CO].
  31. J. Liu, S. Bird, J. M. Z. Matilla, **J. C. Hill**, Z. Haiman, M. S. Madhavacheril, A. Petri, and D. N. Spergel. “MassiveNuS: Cosmological Massive Neutrino Simulations” (2018). *JCAP*, 03, 049, arXiv:1711.10524 [astro-ph.CO].
  32. W. R. Coulton, et al. “Non-Gaussianity of Secondary Anisotropies from ACTPol and Planck” (2017). *JCAP*, 09, 022, arXiv:1711.07879 [astro-ph.CO].
  33. B. D. Sherwin, et al. “The Atacama Cosmology Telescope: Two-Season ACTPol Lensing Power Spectrum” (2017). *Phys. Rev. D*, 95, 123529, arXiv:1611.09753 [astro-ph.CO].
  34. K. N. Abazajian, et al. “CMB-S4 Science Book, First Edition” (2016). arXiv:1610.02743 [astro-ph.CO].
  35. T. Louis, et al. “The Atacama Cosmology Telescope: Two-Season ACTPol Spectra and Parameters” (2017). *JCAP*, 06, 031, arXiv:1610.02360 [astro-ph.CO].
  36. F. de Bernardis, et al. “Detection of the pairwise kinematic Sunyaev-Zel’dovich effect with BOSS DR11 and the Atacama Cosmology Telescope” (2017). *JCAP*, 03, 008, arXiv:1607.02139 [astro-ph.CO].
  37. E. Schaan, et al. “Evidence for the Kinematic Sunyaev-Zel’dovich Effect with ACTPol and Velocity Reconstruction from BOSS” (2016). *Phys. Rev. D*, 93, 082002, arXiv:1510.06442 [astro-ph.CO].
  38. D. Crichton, et al. “Evidence for the Thermal Sunyaev-Zel’dovich Effect Associated with Quasar Feedback” (2015). *MNRAS*, 458, 1478, arXiv:1510.05656 [astro-ph.CO].
  39. N. Battaglia, et al. “Weak-Lensing Mass Calibration of the Atacama Cosmology Telescope Equatorial Sunyaev-Zel’dovich Cluster Sample with the Canada-France-Hawaii Telescope Stripe 82 Survey” (2016). *JCAP*, 08, 013, arXiv:1509.08930 [astro-ph.CO].
  40. M. S. Madhavacheril, et al. “The Atacama Cosmology Telescope: Detection of Lensing of the Cosmic Microwave Background by Dark Matter Halos” (2015). *Phys. Rev. Lett.*, 114, 151302, arXiv:1411.7999 [astro-ph.CO].
  41. A. van Engelen, et al. “The Atacama Cosmology Telescope: Lensing of CMB Temperature and Polarization Derived from Cosmic Infrared Background Cross-Correlation” (2015). *ApJ*, 808, 7, arXiv:1412.0626 [astro-ph.CO].

42. E. Calabrese, et al. “Precision Epoch of Reionization Studies with Next-Generation CMB Experiments” (2014). *JCAP*, 08, 010, arXiv:1406.4794 [astro-ph.CO].
43. S. K. Naess, et al. “The Atacama Cosmology Telescope: CMB Polarization at  $200 < \ell < 9000$ ” (2014). *JCAP* 10, 007, arXiv:1405.5524 [astro-ph.CO].
44. J. L. Sievers, et al. “The Atacama Cosmology Telescope: Cosmological Parameters from Three Seasons of Data” (2013). *JCAP*, 10, 060, arXiv:1301.0824 [astro-ph.CO].
45. B. D. Sherwin, et al. “The Atacama Cosmology Telescope: Cross-Correlation of CMB Lensing and Quasars” (2012). *Phys. Rev. D*, 86, 083006, arXiv:1207.4543 [astro-ph.CO].
46. E. D. Reese, et al. “The Atacama Cosmology Telescope: High-Resolution Sunyaev-Zel’dovich Array Observations of ACT SZE-selected Clusters from the Equatorial Strip” (2012). *ApJ*, 751, 12, arXiv:1108.3343 [astro-ph.CO].

#### Conference proceedings / White papers:

1. D. Alonso, et al. “Combining information from multiple cosmological surveys: inference and modeling challenges” (2021). *Response to 2021 NASA/DOE Request for Information Solicitation*. arXiv:2103.05320 [astro-ph.CO].
2. J. Chluba, et al. “New Horizons in Cosmology with Spectral Distortions of the Cosmic Microwave Background” (2019). *ESA Voyage 2050 White Paper*. arXiv:1909.01593 [astro-ph.CO].
3. K. Basu, et al. “A Space Mission to Map the Entire Observable Universe using the CMB as a Backlight” (2019). *ESA Voyage 2050 White Paper*. arXiv:1909.01592 [astro-ph.CO].
4. J. Delabrouille, et al. “Microwave Spectro-Polarimetry of Matter and Radiation across Space and Time” (2019). *ESA Voyage 2050 White Paper*. arXiv:1909.01591 [astro-ph.CO].
5. S. Hanany, et al. “PICO: Probe of Inflation and Cosmic Origins” (2019). *Astro2020 Project White Paper*. arXiv:1908.07495 [astro-ph.IM].
6. K. Abazajian, et al. “CMB-S4 Decadal Survey APC White Paper” (2019). *Astro2020 Project White Paper*. arXiv:1908.01062 [astro-ph.IM].
7. A. Kogut, et al. “CMB Spectral Distortions: Status and Prospects” (2019). *Astro2020 Project White Paper*. arXiv:1907.13195 [astro-ph.CO].

8. The Simons Observatory Collaboration: M. H. Abitbol, ..., **J. C. Hill**, et al. “The Simons Observatory: Astro2020 Decadal Project Whitepaper” (2019). *Astro2020 Project White Paper*. arXiv:1907.08284 [astro-ph.IM].
9. N. Battaglia and **J. C. Hill**, et al. “Probing Feedback in Galaxy Formation with Millimeter-wave Observations” (2019). *Astro2020 Science White Paper*. arXiv:1903.04647 [astro-ph.CO].
10. J. Chluba, et al. “Spectral Distortions of the CMB as a Probe of Inflation, Recombination, Structure Formation and Particle Physics” (2019). *Astro2020 Science White Paper*. arXiv:1903.04218 [astro-ph.CO].
11. P. D. Meerburg, et al. “Primordial Non-Gaussianity” (2019). *Astro2020 Science White Paper*. arXiv:1903.04409 [astro-ph.CO].
12. D. Green, et al. “Messengers from the Early Universe: Cosmic Neutrinos and Other Light Relics” (2019). *Astro2020 Science White Paper*. arXiv:1903.04763 [astro-ph.CO].
13. T. Mroczkowski, et al. “A High-resolution SZ View of the Warm-Hot Universe” (2019). *Astro2020 Science White Paper*. arXiv:1903.02595 [astro-ph.CO].
14. K. Basu, et al. “SZ spectroscopy in the coming decade: Galaxy cluster cosmology and astrophysics in the submillimeter” (2019). *Astro2020 Science White Paper*. arXiv:1903.04944 [astro-ph.CO].
15. N. Sehgal, et al. “Science from an Ultra-Deep, High-Resolution Millimeter-Wave Survey” (2019). *Astro2020 Science White Paper*. arXiv:1903.03263 [astro-ph.CO].
16. C. Cicone, et al. “The hidden circumgalactic medium” (2019). *Astro2020 Science White Paper*. arXiv:1903.04531 [astro-ph.GA].
17. J. Baker, et al. “Multimessenger science opportunities with mHz gravitational waves” (2019). *Astro2020 Science White Paper*. arXiv:1903.04417 [astro-ph.HE].
18. S. E. Clark, J. E. G. Peek, **J. C. Hill**, and M. E. Putman. “Quantifying the Magnetic Alignment of HI and Dust in the Diffuse ISM” (2016). *Proceedings of the International Astronomical Union — From Interstellar Clouds to Star-Forming Galaxies: Universal Processes?*, 315, E13.
19. **J. C. Hill**. “The Sunyaev-Zel’dovich Effect and Large-Scale Structure” (2015). *Proceedings of the XI<sup>th</sup> Rencontres du Vietnam – Cosmology: 50 Years After CMB Discovery*, Quy Nhon, Vietnam, August 16-22, 2015, arXiv:1510.06237 [astro-ph.CO].

## TALKS

“Searching for New Physics in the Universe’s Oldest Light”  
Aspen Center for Physics Colloquium, Aspen, CO, September 2021

“Non-Gaussian Information in CMB Secondary Anisotropies”  
*Learn the Universe Workshop*, August 2021, Flatiron Institute, New York, NY

“Constraining the Baryon Abundance with the Kinematic Sunyaev-Zel’dovich Effect: Projected-Field Detection Using Planck, WMAP, and unWISE”  
Invited Talk & Panelist, KITP Program on Fundamentals of Gaseous Halos, Santa Barbara, CA, March 2021

“Exploring Cosmological Concordance with ACT DR4, Planck, and Beyond”  
Invited Talk, 16<sup>th</sup> Marcel Grossmann Meeting, July 2021  
Invited Talk, Hubble Tension Workshop, University of Southampton, March 2021  
Invited Plenary Talk, Tehran Meeting on Cosmology at the Crossroads, February 2021

“Early Dark Energy and Cosmological Concordance”  
Invited Astrophysics Seminar at Stony Brook University, September 2020, Stony Brook, NY  
Astronomy Colloquium, University of Texas, September 2020, Austin, TX  
Invited Seminar at Brown University Center for the Fundamental Physics of the Universe, July 2020, Providence, RI  
Invited CosmoClub Seminar, May 2020, ETH, Zurich, CH  
Invited Cosmology Lunch Talk, March 2020, Institute for Advanced Study, Princeton, NJ

“*SPHEREx* and the Simons Observatory: Synergies”  
Invited Talk, 3<sup>rd</sup> *SPHEREx* Community Workshop, February 2020, Flatiron Institute, New York, NY

“Non-Gaussian Statistics of CMB Secondary Anisotropies: Signals and Primordial Contaminants”  
Invited Talk, *Workshop on the non-Gaussian Universe*, September 2019, DAMTP, Cambridge, UK  
Cosmology Seminar, May 2019, DAMTP, Cambridge, UK

“An Analytic Model for the (tSZ/IM/WL) One-Point PDF”  
*Intensity Mapping Workshop*, February 2019, Flatiron Institute, New York, NY

“CMB-TNG: Next-Generation Cosmology and Astrophysics with the Foreground-Cleaned Microwave Background”  
Cosmology Seminar, May 2019, Jet Propulsion Laboratory, Pasadena, CA  
Physics Colloquium, February 2019, Columbia University, New York, NY

CCA Seminar, January 2019, Flatiron Institute, New York, NY

“Constraining Galaxy Formation with Next-Generation CMB Experiments”  
*The CMB in HD*, December 2018, Flatiron Institute, New York, NY  
233<sup>rd</sup> Meeting of the American Astronomical Society, January 2019, Seattle, WA

“New Methods for Multifrequency Component Separation: Reconstruction of Novel Thermal Sunyaev-Zel’dovich Maps from *Planck* Data”  
233<sup>rd</sup> Meeting of the American Astronomical Society, January 2019, Seattle, WA

“The Simons Observatory”  
Invited Talk, *CMB Foregrounds for B-mode Studies*, October 2018, Tenerife, Spain

“Foreground Biases in Primordial Non-Gaussianity Measurements from the CMB”  
Invited Talk, *Unsolved Problems in Astrophysics and Cosmology*, July 2018, Budapest, Hungary  
*The Nonlinear Universe*, July 2018, Smartno, Slovenia  
*CMB Foregrounds Workshop*, June 2018, Flatiron Institute, New York, NY

“Thermal SZ Science in the Stage-IV Era”  
53<sup>rd</sup> *Rencontres de Moriond*, March 2018, La Thuile, IT

“Taking the Universe’s Temperature with CMB Spectral Distortions”  
Invited Talk, *CMB Spectral Distortions*, March 2018, CERN, Geneva, CH

“Cosmic Microwave Backlight: Illuminating Large-Scale Structure with the Universe’s Oldest Photons”  
JBCA Colloquium, May 2019, University of Manchester, Manchester, UK  
Physics Colloquium, March 2018, University of Pennsylvania, Philadelphia, PA  
Institute for Astronomy Colloquium, February 2018, University of Hawaii, Honolulu, HI

“Fundamental Physics from the Cosmic Microwave Background: Inflation, Neutrino Masses, and Beyond”  
Physics Colloquium, February 2018, University of Hawaii, Honolulu, HI  
Research Progress Meeting (Colloquium), April 2018, Lawrence Berkeley National Laboratory, Berkeley, CA

“Modeling CMB Secondary Anisotropies: Critical Aspects for Next-Generation Surveys”  
Invited Talk, *Extragalactic Sky Modeling*, January 2018, UC-Berkeley, Berkeley, CA

“Extragalactic Foreground Modeling”

Invited Talk, *CMB Foregrounds*, November 2017, UC-San Diego, San Diego, CA

“Multi-Tracer CMB Delensing”

Invited Talk, *B-Modes from Space*, December 2017, UC-Berkeley, Berkeley, CA

“CMB Foregrounds: Problems, Parameterizations, and Progress”

Cosmology Seminar, May 2018, Perimeter Institute, Waterloo, ON

Gravity Group Seminar, April 2018, Princeton University, Princeton, NJ

Invited Talk, *TeV Particle Astrophysics (TeVPA)*, August 2017, Ohio State University, Columbus, OH

Invited Talk, *The Nonlinear Universe*, July 2017, Smartno, Slovenia

“New Information in Ancient Photons: Novel Approaches to CMB Secondary Anisotropies”

Center for Computational Astrophysics Colloquium, February 2018, Flatiron Institute, New York, NY

Astrophysics Seminar, February 2018, Rutgers University, New Brunswick, NJ

Informal Astrophysics Seminar, January 2018, Institute for Advanced Study, Princeton, NJ

Astrophysics Seminar, November 2017, University of Oxford, Oxford, UK

Cosmology Seminar, October 2017, University of Minnesota, Minneapolis, MN

CCPP Seminar, April 2017, New York University, New York, NY

Physics Colloquium, February 2017, McGill University, Montreal, QC

Cosmology Lunch Talk, December 2016, Institute for Advanced Study, Princeton, NJ

Institute for Nuclear and Particle Astrophysics Seminar, November 2016, Lawrence Berkeley National Laboratory, Berkeley, CA

Astronomy Journal Club Talk, October 2016, University of Pennsylvania, Philadelphia, PA

“CMB Spectral Distortions”

Invited Talk, *NRAO Futures II*, August 2016, Baltimore, MD

“CMB Spectral Distortions from the Low- $z$  Universe”

Invited Talk, *CMB Spectral Distortions From Cosmic Baryon Evolution*, July 2016, Raman Research Institute, Bangalore, India

“New Information in Old Photons: CMB Secondary Anisotropies”

Invited Talk, *Cosmological Probes of Fundamental Physics*, June 2016, Weizmann Institute of Science, Rehovot, Israel

“Kinematic and Thermal SZ Cross-Correlations with LSST, AdvACT, and

CMB-S4”

*LSST Cross-Correlation Spectacular*, May 2016, Brookhaven National Laboratory, Upton, NY

“More Is Different: The Power of Multi-Probe CMB/LSS Cross-Correlations”  
KICP Seminar, April 2016, University of Chicago, Chicago, IL  
HEP/Cosmology Seminar, April 2016, Argonne National Laboratory, Lemont, IL

“Kinematic Sunyaev-Zel’dovich Detection with Projected Fields”  
Journal-Club Univers, April 2016, Institut d’Astrophysique de Paris, Paris, France

“The Sunyaev-Zel’dovich Effect and Large-Scale Structure”  
Invited Talk, *XI<sup>th</sup> Rencontres du Vietnam: Cosmology 50 Years After CMB Discovery*, August 2015, International Centre for Interdisciplinary Science and Education, Quy Nhon, Vietnam  
Astroparticule et Cosmologie (APC) Seminar, October 2015, Université Paris Diderot, Paris, France

“Planck and CFHTLenS: Cross-Correlation of Thermal Sunyaev-Zel’dovich, CMB Lensing, and Galaxy Weak Lensing Maps”  
Astronomy Journal Club Talk, May 2015, University of Pennsylvania, Philadelphia, PA

“Cosmology from the One-Point Probability Distribution Function”  
Center for Astrophysical Sciences Seminar, February 2015, Johns Hopkins University, Baltimore, MD  
Contributed Talk, *Computing the Universe*, January 2015, UC-Berkeley, Berkeley, CA

“Toward an Understanding of Foreground Emission in the BICEP2 Region”  
ISCAP Seminar, September 2014, Columbia University, New York, NY

“Detection of Thermal SZ – CMB Lensing Cross-Correlation with Planck”  
Invited Talk, *Cross-correlations in the high-redshift sky*, June 2014, University College London, London, UK

“New Constraints on the Amplitude of Cosmic Density Fluctuations and Intracluster Gas from the Thermal SZ Signal Measured by Planck and ACT”  
Contributed Talk, *Clusters Paris 2014*, June 2014, L’Observatoire de Paris, Paris, France

Dissertation Talk, 223<sup>rd</sup> Meeting of the American Astronomical Society, January 2014, Washington, D.C.

Berkeley/LBNL Cosmology Seminar, November 2013, UC-Berkeley, Berkeley, CA

KIPAC Seminar, November 2013, Stanford University, Stanford, CA



Center for Astrophysical Sciences Seminar, November 2013, Johns Hopkins University, Baltimore, MD

Cosmology Seminar, November 2013, Perimeter Institute for Theoretical Physics, Waterloo, ON

CITA Seminar, November 2013, Canadian Institute for Theoretical Astrophysics, Toronto, ON

ITC Seminar, November 2013, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA

Astrophysics Lunch Talk, November 2013, MIT, Cambridge, MA

Cosmology Seminar, October 2013, Yale University, New Haven, CT

Astronomy Department Seminar, September 2013, Columbia University, New York, NY

Wednesday Lunch Seminar, September 2013, Princeton University, Princeton, NJ

“Cosmology from tSZ Statistics”

Invited Talk, *Cosmology in the Planck Era*, June 2013, Princeton University, Princeton, NJ

“Cosmology (and the ICM) from Compton- $y$ ”

Contributed Talk, *Cosmology Beyond the Power Spectrum*, April 2013, UC-Berkeley, Berkeley, CA

“Cosmological Constraints from Moments of the Thermal SZ Effect”

Berkeley/LBNL Cosmology Seminar, August 2012, UC-Berkeley, Berkeley, CA

Contributed Talk, PCTS Galaxy Cluster Workshop, April 2012, Princeton University, Princeton, NJ

Wednesday Lunch Seminar, April 2012, Princeton University, Princeton, NJ

“Do We Live in a Void? Testing via the kSZ Effect”

Contributed Talk, *Summer School on Cosmology*, July 2010, International Centre for Theoretical Physics, Trieste, Italy

Cosmology Seminar, June 2010, Oxford University, Oxford, UK

## POSTERS

“The Atacama Cosmology Telescope: A Measurement of the Thermal Sunyaev-Zel’dovich One-Point Probability Distribution Function”

*Closing in on the Cosmological Model*, March 2015, Aspen, CO

*Planck 2014: The Microwave Sky in Temperature and Polarization*, December 2014, Ferrara, Italy

“Observing Primordial non-Gaussianity via the Thermal Sunyaev-Zel’dovich Effect”

*Essential Cosmology for the Next Generation*, January 2012, Cancun, MX  
awarded prize for best poster at conference

“Do We Live in a Void? Testing via the kSZ Effect”

*The Cosmic Enigma: Cosmology and Particle Astrophysics*, June 2010, University College London, London, UK

“The Mass Function of Nearby Galaxy Clusters: Cosmological Constraints”  
211<sup>th</sup> Meeting of the American Astronomical Society, January 2008, Austin, TX

TEACHING EXPERIENCE Instructor: Advanced Mechanics (Columbia Physics GU4003), Spring 2020, Spring 2021  
Instructor: Graduate Student Seminar (Columbia Physics GR6905), Spring 2020, Fall 2020

Teaching Assistant: General Relativity (Princeton Astro 301), Fall 2011  
Grader: Relativity (MIT 8.033), Fall 2006

STUDENTS SUPERVISED Aleksandra Kusiak (Ph.D. student, Columbia): current advisor, including on “Constraining the Baryon Abundance with the Kinematic Sunyaev-Zel’dovich Effect: Projected-Field Detection Using Planck, WMAP, and unWISE” (arXiv:2102.01068 [astro-ph.CO].)

Sultan Abylkairov (undergraduate student, Nazarbayev University, Kazakhstan): co-advisor with Blake Sherwin on “Partially Constrained Internal Linear Combination: a method for low-noise CMB foreground mitigation” (arXiv:2012.04032 [astro-ph.CO].)

Leander Thiele (master’s student, Perimeter Institute; Ph.D. student, Princeton): co-advisor with Kendrick Smith on “An Accurate Analytic Model for the Thermal Sunyaev-Zel’dovich One-Point PDF” (arXiv:1812.05584 [astro-ph.CO]) and “Accurate Analytic Model for the Weak Lensing Convergence One-Point Probability Distribution Function and its Auto-Covariance” (arXiv:2009.06547 [astro-ph.CO].)

Maximilian Abitbol (Ph.D. student, Columbia):

- Co-advisor with Bradley Johnson on “Foreground-Induced Biases in CMB Polarimeter Self-Calibration” (arXiv:1512.06834 [astro-ph.CO])
- Primary advisor on “Prospects for Measuring Cosmic Microwave Background Spectral Distortions in the Presence of Foregrounds” (2017). (arXiv:1705.01534 [astro-ph.CO])

Jia Liu (Ph.D. student, Columbia): co-advisor with Zoltán Haiman on several projects, including:

- “Cross-Correlation of Planck CMB Lensing and CFHTLenS Galaxy Weak Lensing Maps” (arXiv:1504.05598 [astro-ph.CO])

- “Constraining Multiplicative Bias in CFHTLenS Weak Lensing Shear Data” (arXiv:1601.05720 [astro-ph.CO])
- “CMB Lensing Beyond the Power Spectrum: Cosmological Constraints from the One-Point PDF and Peak Counts” (arXiv:1608.03169 [astro-ph.CO])

Susan Clark (Ph.D. student, Columbia): co-advisor with Josh Peek and Mary Putman on “Neutral hydrogen structures trace dust polarization angle: Implications for cosmic microwave background foregrounds” (arXiv:1508.07005 [astro-ph.CO]).

Alvaro Ortiz-Vazquez (undergraduate student, Columbia): advisor on summer research project “Constraining Multiplicative Bias in CFHTLenS Weak Lensing Shear Data” (arXiv:1601.05720 [astro-ph.CO]).

Johnny Greco (Ph.D. student, Princeton): co-advisor with David Spergel on “The Stacked Thermal SZ Signal of Locally Brightest Galaxies in Planck Full Mission Data: Evidence for Galaxy Feedback?” (arXiv:1409.6747 [astro-ph.CO]).

OUTREACH Instructor and Course Content Developer, CMB-S4 Data Analysis Summer School, August 2021

<https://sites.google.com/cmb-s4.org/summer-school-2021/home>

Instructor, ACT CMB Data School, April 2021

<https://sites.google.com/view/actdataschool>

Columbia University Bridge Program Selection Committee (2021)

“The Hubble Conundrum: A Potential Hint of New Physics in the Universe’s Oldest Light”

August 2020, Heinz R. Pagels Physics Talk, Aspen Center for Physics, Aspen CO, <https://www.youtube.com/watch?v=5yKrSy18u0A>

October 2020, Society of Physics Students Outreach Talk, Columbia University

“Early Dark Energy and Cosmological Concordance”

May 2020, YouTube Cosmology Talk: <https://www.youtube.com/watch?v=5JRHFguPAV8>

“Dust, Distortions, and Shadows in the Universe’s Oldest Light”

cover article for Spring 2015 issue of Sigma Pi Sigma *Radiations*

<http://www.sigmapisigma.org/sigmapisigma/radiations/spring-2015>

“Galaxy Clusters and the Sunyaev-Zel’dovich Effect”  
outreach talk to students in undergraduate summer research program  
June 2012, Princeton University, Princeton, NJ

PROFESSIONAL ACTIVITIES Simons Observatory Theory and Analysis Committee Member  
Simons Observatory Foreground Analysis Working Group Co-Leader  
Simons Observatory SZ Analysis Working Group Co-Leader  
Simons Observatory Collaboration Oversight Committee Member  
Atacama Cosmology Telescope – Dark Energy Survey Joint Analysis Co-Coordinator  
CMB-S4 Science Council Member: Co-Coordinator of Galaxy Formation and Evolution Analysis Working Group (2017-19)  
Probe of Inflation and Cosmic Origins (PICO) Executive Team Member

IAS/Princeton Joint Astrophysics Colloquium Organizer (2018-2019)  
CCA/NYU Cosmology × Data Science Group Meeting Organizer (2019-)

Convener: COSMO ’21, August 2021, University of Illinois (remote):  
<https://caps.ncsa.illinois.edu/conferences/cosmo21/>  
Workshop Co-organizer: The Nonlinear Universe 2018, July 2018, Smartno, Slovenia: <http://bccp.berkeley.edu/2018-non-linear-universe/>  
Workshop Organizer: CMB Foregrounds at CCA, June 2018, New York, NY  
Workshop Co-organizer: Neutrinos and Light Particles in Cosmology, June 2016, UC Berkeley, Berkeley, CA:  
<http://bccp.berkeley.edu/neutrinocosmology2016/>

Referee for: *Physical Review Letters*, *Physical Review D*, *The Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, *Journal of Cosmology and Astroparticle Physics*, *Astronomy & Astrophysics*, *Physics Letters B*, *Physics of the Dark Universe*

NASA Panel Reviewer: NESSF (2017–2019), ATP Proposals (2019, 2021)  
NSF AAG Panel Reviewer (2018)  
UK STFC Proposal Reviewer (2019)  
European Research Council Proposal Reviewer (2020)

American Astronomical Society Member  
American Physical Society Member

Princeton Astrophysics “Wunch” (Wednesday Lunch) Seminar Organizer 2010-11  
MIT Society of Physics Students: President (2007-8); Secretary (2006-7)

REFERENCES David N. Spergel, Princeton University dns@astro.princeton.edu  
Zoltán Haiman, Columbia University zoltan@astro.columbia.edu  
Bhuvnesh Jain, University of Pennsylvania bjain@physics.upenn.edu  
Jo Dunkley, Princeton University jdunkley@princeton.edu  
James G. Bartlett, Université Paris Diderot bartlett@apc.univ-paris7.fr