Noah G. Sailer

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Education

2019 – 2024 • **University of California, Berkeley** – Berkeley, CA
Ph.D., Physics — 2025 (expected)
M.A., Phyiscs — 2021

2015 – 2019 • **Cornell University college of Arts and Sciences** – Ithaca, NY
B.A. *summa cum laude* in Physics & *cum laude* in Mathematics — 2019

Appointments

2019 – present • **Graduate Student Researcher** – UC Berkeley
Advisors: *Martin White & Simone Ferraro*

2023 • **DOE SCGSR Fellow** – Lawrence Berkeley National Laboratory
Project title: *Structure growth from cross-correlations of galaxy clustering and CMB lensing*
Advisor: *Simone Ferraro*

2017 – 2019 • **Undergraduate Research Assistant** – Cornell University
Designed and built a cryogenic filter wheel which enables spectroscopic measurements of samples cooled to 6 Kelvin.
Advisor: *Michael Niemack*

2018 • **DOE SULI Intern** – SLAC National Accelerator Laboratory
Developed and tested an image recognition algorithm designed to search for proton decay in future liquid argon time projection chambers.
Advisor: *Hirohisa Tanaka*

Honors and Awards

2023 • **DOE SCGSR fellowship**
12 months of support to conduct research at Lawrence Berkeley National Lab

2021 • **NSF Graduate Research Fellowship**, *honorable mention*
Proposed project title: *Neutrino mass measurement from upcoming cosmological surveys*

2019 • **Kieval prize in physics**, Cornell University
"Awarded to a senior Physics student who demonstrates unusual promise for future contributions to physics research."

• **Undergraduate teaching award**, Cornell University
Awarded to undergraduate students who taught for at least 5 semesters.

2018 • **Phi Beta Kappa**, Cornell University
Awarded to juniors in the college of Arts and Sciences with GPA's in the top 3% of their class.

Professional Service and Leadership

Active Collarboation Membership

2021 – present • CMB-S4

2020 – present • Dark Energy Spectroscopic Instrument (DESI)

Professional Service and Leadership (continued)

- Simons Observatory (SO)

Conference and Seminar Organization

2022 • *Power Spectrum Science* session co-chair, UC San Diego workshop on Primordial Physics with Spectroscopic Surveys

Journal Reviewer

- The Astrophysical Journal
- Physical Review Letters

Misc

2022 • Facilitator for UC Berkeley's Respect is a Part of Research

2021 – 2022 • Graduate student representative for UC Berkeley faculty hiring committee

2019 – 2021 • UC Berkeley physics social hour coordinator

Mentorship, Teaching and Outreach

Mentorship

2024 – present • Abby Schleigh, UC Berkeley Pi^2 scholar

2022 – 2023 • Nikolaos Kalntis, former visiting student at LBNL

2022 • Kennedy Sleet, Simons-NSBP Scholar

2021 • Jonathan Conrad, UC Berkeley Physics Directed Reading Program

Teaching Experience

2019 – 2021 • *Private physics tutor* — Berkeley, CA

2017 – 2019 • *Physics tutor*, Learning Strategies Center — Ithaca, NY

Fall 2016 • *Undergraduate Teaching Assistant*, Cornell University — Ithaca, NY
Physics 2217: Electricity and Magnetism

Spring 2016 • *Undergraduate Teaching Assistant*, Cornell University — Ithaca, NY
Physics 1116: Mechanics and Special Relativity

Pedagogical Training

2016 • Physics 4484: Teaching and Learning Physics, Cornell University

Outreach

2020 • **Bay Area Science Festival** — Berkeley, CA
Public talk about the role of massive neutrinos in cosmology.

• **Self e-STEM** — Oakland, CA
Helped participants design their own rooms in virtual reality.

2019 – 2020 • **Splash at Berkeley** — Berkeley, CA
Gave a brief cosmology crash course to local high school students.

2018 – 2019 • **Expanding Your Horizons** — Ithaca, NY
Led various physics demos (e.g. Chladni plates) for a program encouraging young women to pursue STEM-related careers.

Presentations

2024 • Cosmology seminar, Max Planck Institute for Astrophysics — Garching, Germany
What is $S_8(z_{low})$...actually?

Presentations (continued)

- New Physics from Old Light: Illuminating the Universe with CMB Secondaries — Cambridge, UK
  What is $S_8(z_{low})$...actually?
- Cambridge CMB/LSS meeting — Cambridge, UK
  What is $S_8(z_{low})$...actually?
- Cosmology in the Adriatic: From PT to AI — Split, Croatia
  What is $S_8(z_{low})$...actually?
- DESI collaboration meeting — Marseille, France
  Cosmology from DESI LRGs $\times$ Planck PR4 + ACT DR6 CMB lensing
- Cosmology seminar, Stanford University — Stanford, CA
  Structure growth from the cross-correlation of DESI Luminous Red Galaxies and CMB lensing
- DESI C3 telecon — virtual
  Cross-correlation of LRGs and ACT DR6 CMB lensing
- TACOS seminar, University of Arizona — Tucson, AZ
  Structure growth from cross-correlations of galaxies and CMB lensing

2023
- DESI collaboration meeting — Waikoloa, HI
  Update on DESI LRGs $\times$ CMB lensing from Planck and ACT
- Cambridge CMB/LSS meeting — Cambridge, UK
  Ensuring robust inference from DESI LRGs $\times$ ACT CMB lensing
- DESI collaboration meeting — Durham, UK
  Ensuring robust inference from DESI LRGs $\times$ ACT CMB lensing
- INPA seminar, Lawrence Berkeley National Laboratory — Berkeley, CA
  Accurate cosmology from CMB lensing and galaxy surveys
- CMB-S4 Maps to Other Statistics telecon — virtual
  Foreground-immune CMB lensing reconstruction with polarization
- Simons Observatory lensing telecon — virtual
  Generalizing bias-hardening and shear-only reconstruction to polarization
- Berkeley CMB lunch — Berkeley, CA
  Foreground-immune CMB lensing reconstruction with polarization
- 241st AAS meeting — Seattle, WA
  Cross-correlating DESI Luminous Red Galaxies (LRGs) with ACT CMB lensing

2022
- BCCP cosmology workshop — Vipolže, Slovenia
  Removing extragalactic foregrounds from upcoming CMB lensing measurements
- Cosmology summer school, ICTP — Trieste, Italy
  Removing extragalactic foregrounds in CMB lensing reconstruction

2021
- Cosmology seminar, Canadian Institute for Theoretical Astrophysics — virtual
  Prospects for fundamental physics from high redshift
- Cosmology seminar, Brookhaven National Laboratory — virtual
  Cosmology from high redshift 21cm intensity mapping
- DESI lunch, Lawrence Berkeley National Laboratory — virtual
  Cosmology at high redshift $(z > 2)$

2020
- Simons Observatory lensing telecon — virtual
  Removing bias to CMB lensing from extragalactic foregrounds: combined estimators & modified ILCs
- Simons Observatory lensing telecon — virtual
  Mitigating CMB lensing biases from extragalactic foregrounds with bias-hardening

Publications

Citations: ADS iNSPIRE Google Scholar

Journal Articles

1. D. Baradaran, B. Hadzhiyska, M. J. White, and **N. Sailer**, "Predicting the 21 cm field with a Hybrid Effective Field Theory approach," Jun. 2024. arXiv: 2406.13079 [astro-ph.CO].
2. J. Kim, **N. Sailer**, M. S. Madhavacheril, *et al.*, "The Atacama Cosmology Telescope DR6 and DESI: Structure formation over cosmic time with a measurement of the cross-correlation of CMB Lensing and Luminous Red Galaxies," Jul. 2024. arXiv: 2407.04606 [astro-ph.CO].
3. **N. Sailer**, J. Kim, S. Ferraro, *et al.*, "Cosmological constraints from the cross-correlation of DESI Luminous Red Galaxies with CMB lensing from Planck PR4 and ACT DR6," Jul. 2024. arXiv: 2407.04607 [astro-ph.CO].
4. O. Darwish, B. D. Sherwin, **N. Sailer**, E. Schaan, and S. Ferraro, "Optimizing foreground mitigation for CMB lensing with combined multifrequency and geometric methods," *Phys. Rev. D*, vol. 107, no. 4, 043519, Feb. 2023. DOI: 10.1103/PhysRevD.107.043519. arXiv: 2111.00462 [astro-ph.CO].
5. **N. Sailer**, S. Ferraro, and E. Schaan, "Foreground-immune CMB lensing reconstruction with polarization," *Phys. Rev. D*, vol. 107, no. 2, 023504, Jan. 2023. DOI: 10.1103/PhysRevD.107.023504. arXiv: 2211.03786 [astro-ph.CO].
6. R. Zhou, S. Ferraro, M. White, *et al.*, "DESI luminous red galaxy samples for cross-correlations," *J. Cosm. Astrop. Phys.*, vol. 2023, no. 11, 097, Nov. 2023. DOI: 10.1088/1475-7516/2023/11/097. arXiv: 2309.06443 [astro-ph.CO].
7. **N. Sailer**, S.-F. Chen, and M. White, "Optical depth to reionization from perturbative 21 cm clustering," *J. Cosm. Astrop. Phys.*, vol. 2022, no. 10, 007, Oct. 2022. DOI: 10.1088/1475-7516/2022/10/007. arXiv: 2205.11504 [astro-ph.CO].
8. **N. Sailer**, E. Castorina, S. Ferraro, and M. White, "Cosmology at high redshift - a probe of fundamental physics," *J. Cosm. Astrop. Phys.*, vol. 2021, no. 12, 049, Dec. 2021. DOI: 10.1088/1475-7516/2021/12/049. arXiv: 2106.09713 [astro-ph.CO].
9. **N. Sailer**, E. Schaan, S. Ferraro, O. Darwish, and B. Sherwin, "Optimal multifrequency weighting for CMB lensing," *Phys. Rev. D*, vol. 104, no. 12, 123514, Dec. 2021. DOI: 10.1103/PhysRevD.104.123514. arXiv: 2108.01663 [astro-ph.CO].
10. **N. Sailer**, E. Schaan, and S. Ferraro, "Lower bias, lower noise CMB lensing with foreground-hardened estimators," *Phys. Rev. D*, vol. 102, no. 6, 063517, Sep. 2020. DOI: 10.1103/PhysRevD.102.063517. arXiv: 2007.04325 [astro-ph.CO].

White Papers

1. K. Abazajian, A. Abdulghafour, G. E. Addison, *et al.*, *Snowmass 2021 CMB-S4 White Paper*, Mar. 2022. arXiv: 2203.08024 [astro-ph.CO].
2. S. Ferraro, **N. Sailer**, A. Slosar, and M. White, *Snowmass2021 Cosmic Frontier White Paper: Cosmology and Fundamental Physics from the three-dimensional Large Scale Structure*, Mar. 2022. arXiv: 2203.07506 [astro-ph.CO].
3. D. J. Schlegel, S. Ferraro, G. Aldering, *et al.*, *A Spectroscopic Road Map for Cosmic Frontier: DESI, DESI-II, Stage-5*, Sep. 2022. arXiv: 2209.03585 [astro-ph.CO].