Ethan Nadler | Curriculum Vitae

Carnegie Observatories & University of Southern California
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Research

Dark Matter

– Measuring dark matter microphysics using observations of small-scale cosmic structure;
– Simulating structure formation in dark matter models beyond CDM.

Computational Astrophysics

– Emulating the impact of baryons on small-scale structure using cosmological simulations;
– Modeling the connection between (satellite) galaxies and dark matter (sub)halos.

Near-field Cosmology

– Reconstructing primordial density fluctuations from dwarf galaxy populations;
– Unifying dark matter constraints from near-field, strong lensing, and high-redshift data.

Positions

Carnegie Observatories & University of Southern California *2021–*
Postdoctoral Research Fellow

Education

Stanford University *2021*
Ph.D., Physics
Thesis: Faint Galaxies and Small Halos: Probes of Galaxy Formation and Dark Matter

University of California, Santa Barbara *2016*
B.S., Physics
Thesis: Universality in the Structure and Abundance of Dark Matter Halos

Scientific Collaborations

Satellites Around Galactic Analogs Survey: Member *2019–*
DECam Local Volume Exploration (DELVE) Survey: Member *2019–*
Rubin LSST Dark Energy Science Collaboration: Member, Dark Matter Working Group *2018–*
Dark Energy Survey: Member, Milky Way Working Group *2018–*

Fellowships & Awards

Carnegie DEI Grant: CreateNow + Carnegie: Dark Matter & Data Visualization *2022–*
XSEDE Allocation: Cosmological Simulations of Milky Way Analogs with Galactic Disks *2022–23*
XSEDE Allocation: Simulations of Milky Way Halos with Large Magellanic Cloud Analogs *2020–21*
NSF Graduate Research Fellow: National Science Foundation *2018–21*
Faculty Committee Commendation of Excellence: UCSB College of Creative Studies *2016*
Outstanding Senior Award: UCSB Department of Physics *2016*

Mentoring

Graduate Student Project Advisor *2021–*

- Niusha Ahvazi, UCR/Carnegie: Semi-analytic modeling of dwarf galaxy formation and evolution (see N. Ahvazi, A. Benson, L. Sales, E. O. Nadler *et al*. 2024)
- Wendy Crumrine, USC: Constraining dark matter–radiation interactions with small-scale structure;
- Elise Darragh-Ford, Stanford: Searching for dwarf galaxies and stellar streams in *Gaia* data (see E. Darragh-Ford, E. O. Nadler *et al*. 2021);
- Trey Driskell, USC: Semi-analytic modeling of structure and galaxy formation (see T. Driskell, E. O. Nadler *et al*. 2022);
- Noah Glennon, UNH: Soliton orbital evolution in self-interacting axion dark matter (see N. Glennon, E. O. Nadler *et al*. 2022; N. Glennon, N. Musoke, E. O. Nadler *et al*. 2024);
- Karime Maamari, USC: Simulating galaxy formation with dark matter–baryon interactions;
- Sidney Mau, Stanford: Constraining the dark matter particle lifetime with dwarf galaxies (see S. Mau, E. O. Nadler *et al*. 2022);
- Siddhesh Raut, USC/Carnegie: Self-interacting dark matter halo gravothermal evolution modeling;
- Yunchong Wang, Stanford: Empirically modeling dwarf galaxy star formation histories (see Y. Wang, E. O. Nadler *et al*. 2021; 2024);

Undergraduate, Post-baccalaureate, & High-school Student Advisor *2018–*

- Deveshi Buch, Stanford '24: Cosmological zoom-in simulations of Milky Way-like systems; (see D. Buch, E O. Nadler *et al*. 2024)
- Shuxing Fang, USC '22: Large Magellanic Cloud infall in self-interacting dark matter;
- Abigail Lee, UPenn '19 → UChicago: Subhalo disruption in galaxy clusters.
- Nyal McCrea (Simons–NSBP Scholar), CWU '22 → Synrad: Visualizing subhalo populations;
- Ellen Min, Caltech '24: Code development and Python implementation for Galacticus;
- Nicel Mohamed-Hinds, Stanford '19 → UW: Emulating hydrodynamic zoom-in simulations;
- Veronica Pratt, Stanford '23 → Tufts: Statistics of Large Magellanic Cloud analogs in the SAGA Survey;
- Juan Quiroz, Caltech '24: Modeling subhalo evolution in decaying dark matter models;
- Derek Rodriguez, USC Hybrid High '23 → UCLA: Symphony simulation analysis;
- Resherle Verna, USC '20 → UT Austin: Subhalo populations in SIDM + hydrodynamic simulations;
- Logan White (Simons–NSBP Scholar), NCSU '25: Halo mass function evolution beyond CDM;

Teaching

Guest Lecturer (USC) *2022*

- *Advanced Cosmology*: Lecture on *Structure Formation & Galaxies*.

Textbook Co-Author (University of California, Davis) *2022*

- *A Cosmology Workbook: 31: Structure Formation*, *32: Galaxy Formation*.

Teaching Assistant (Stanford) *2017–21*

- *Structure Formation & Galaxy Formation*, *Modern Astrophysics*, *Cosmology & Extragalctic Astrophysics*, *Origin & Development of the Cosmos*, *Electricity & Magnetism*.

Course Assistant (UCSB) *2015–16*

- *Relativistic Quantum Mechanics*, *Kinetic Theory & Relativity*, *Mechanics & Waves*, *Newtonian Mechanics*.

Tutor (UCSB Campus Learning Assistance Services) *2015-16*

- Held biweekly supplementary lectures for *Basic Physics*, *Linear Algebra*, *Differential Equations*.

Outreach & Service

Conference Coordinator (KITP, Cosmic Signals of Dark Matter Physics: New Synergies) *2024*

Carnegie Observatories Lectures at the Huntington (Speaker) [video] *2023*

Proposal Review Panel Member (*NASA Astrophysics Data Analysis Program*) *2022*

CreateNow + Carnegie: Dark Matter & Data Visualization (Course Instructor) *2022*

Carnegie Observatories Lectures at Pasadena City College (Speaker) *2022*
Carnegie Observatories Lunch with an Astronomer (Speaker) *2022*
Cosmic Cocktail Hour with Carnegie Observatories (Speaker) *2022*
USC Physics Climate Committee (Postdoctoral & Staff Representative) *2021–*
UCSB Physics NSF REU (Speaker) *2021–*
San Mateo County Astronomical Society (Speaker) [video] *2021*
Journal Referee (*ApJ*, *Astropart. Phys.*, *JCAP*, *MNRAS*, *PRL*, *Language & Cognition*) *2019–*
Astronomy on Tap San Francisco (Speaker and Volunteer) *2018–20*
Stanford Future Advancers of Science and Technology (Physics Mentor) *2017–19*

Media

UC Riverside News, *New dark matter theory explains two puzzles in astrophysics* *2023*
Quanta Magazine, *In a Monster Star's Light, a Hint of Darkness* *2023*
KIPAC Research Highlight, *Between the worlds of the visible and invisible lies: Dark Matter* *2021*
Fermilab Press Release, *DES census of the smallest galaxies hones the search for dark matter* *2020*
SLAC Press Release, *Milky Way satellites reveal link between dark matter and galaxy formation* *2020*
AAS Nova Research Highlight, *Constraining collisions of dark matter* *2019*
SLAC Press Release, *Satellite galaxies provide new clues about dark matter* *2019*
KIPAC Research Highlight, *Dark matter subhalo disruption: insights from machine learning* *2018*

Invited Presentations

Review: Dark Matter Constraints from Dwarf Galaxies *2024*
Durham, Small Galaxies, Cosmic Questions - II

Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys *2024*
LBNL, Fundamental Physics from Future Spectroscopic Surveys

Revealing Dark Matter and Galaxy Formation with Small-Scale Structure *2024*
Rice, Astronomy & Astrophysics Seminar
UC San Diego, Astrophysics Colloquium
Caltech, TAPIR Seminar

SIDM (Sub)halos in Milky Way and Strong Lens Analogs *2023*
Pollica Physics Centre, Self-Interacting Dark Matter Models, Simulations and Signals [slides]

Cosmological Simulations with Novel Dark Matter Physics *2023*
UC Riverside, GalFRESCA
UCLA, Dark Matter 2023 [slides]
KICP, Astronomy & Astrophysics Seminar

The Faint End of the Galaxy–Halo Connection *2023*
KITP, Building a Physical Understanding of Galaxy Evolution [video]

Dark Matter Constraints from Small-Scale Structure *2022*
CERN Theory Institute, New Physics from Galaxy Clustering [video, slides]

Symphony: Cosmological Zoom-in Simulations over Four Decades of Host Halo Mass *2022*
Caltech, GalFRESCA [slides]

Dark Matter Physics + Rubin LSST *2022*
LSST Dark Energy Science Collaboration, CosmoPalooza

Towards Precision Near-Field Cosmology *2021*
KIPMU, Astro Lunch Seminar
UC Riverside, Astronomy Seminar
Fermilab, Cosmic Physics Center Seminar [video]

Dark Matter Constraints from a Unified Analysis of Strong Lenses and Satellite Galaxies *2021*
LSST DESC Dark Matter Working Group
Virginia Tech Center for Neutrino Physics, Journal Club

The Faintest Galaxies and their Dark Matter Halos *2020–21*
Harvard-Smithsonian Center for Astrophysics, GCSP Seminar [video]
International Centre for Theoretical Sciences, Less Travelled Path of Dark Matter [video, slides]
KITP, The Galaxy–Halo Connection Across Cosmic Time: Recent Updates [video]
LIneA, Webinar [video, slides]
KIPAC, Astrophysics Colloquium [video]
Fermilab, New Perspectives [slides]
BSM Pandemic Seminar [video, slides]

Milky Way Satellites: Probes of Dark Matter Microphysics *2019*
University of Chicago, Cosmic Controversies [slides]
KICP, LSST Dark Matter Workshop [slides]
Institute for Advanced Study, Astro Coffee
Johns Hopkins, High Energy Physics/Cosmology Seminar
UC Berkeley, LSST DESC Winter Collaboration Meeting

Modeling Subhalos and Satellites in Milky Way-like Systems *2018*
KICP, Near-Field Cosmology with DES DR1 [slides]
KITP, The Small-Scale Structure of Cold(?) Dark Matter [video, slides]
UC Berkeley Center for Cosmological Physics, Cosmology Seminar [slides]

Predicting Realistic Subhalo Populations *2017*
KITP, The Galaxy–Halo Connection Across Cosmic Time

First & Co-Authored Publications

E. O. Nadler, V. Gluscevic, T. Driskell, R. H. Wechsler, L. A. Moustakas, *et al*. *Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys*. 2401.10318 (ApJ in press).

E. O. Nadler, D. Yang, and H.-B. Yu. *A Self-interacting Dark Matter Solution to the Extreme Diversity of Low-mass Halo Properties*. 2023, ApJL, 958, L39.

E. O. Nadler, P. Mansfield, Y. Wang, X. Du *et al*. *Symphony: Cosmological Zoom-in Simulation Suites over Four Decades of Host Halo Mass*. 2023, ApJ, 945, 159.

E. O. Nadler, A. Benson, T. Driskell, X. Du, and V. Gluscevic. *Growing the First Galaxies' Merger Trees*. 2023, MNRAS, 521, 3201.

E. O. Nadler, A. Banerjee, S. Adhikari, Y.-Y. Mao, and R. H. Wechsler. *The Effects of Dark Matter and Baryonic Physics on the Milky Way Subhalo Population in the Presence of the Large Magellanic Cloud*. 2021, ApJL, 920, L11.

E. O. Nadler, S. Birrer, D. Gilman, R. H. Wechsler, X. Du, A. Benson, A. Nierenberg, and T. Treu. *Dark Matter Constraints from a Unified Analysis of Strong Gravitational Lenses and Milky Way Satellite Galaxies*. 2021, ApJ, 917, 7.

S. Das & **E. O. Nadler**. *Constraints on the epoch of dark matter formation from Milky Way satellites*. 2021, PRD, 103, 043517.

E. O. Nadler & A. Drlica-Wagner *et al.* (DES Collaboration). *Constraints on Dark Matter Properties from Observations of Milky Way Satellite Galaxies*. 2021, PRL, 126, 091101.

E. O. Nadler, A. Banerjee, S. Adhikari, Y.-Y. Mao, and R. H. Wechsler. *Signatures of Velocity-dependent Dark Matter Self-interactions in Milky Way-mass Halos*. 2020, ApJ, 896, 112.

E. O. Nadler & R. H. Wechsler *et al.* (DES Collaboration). *Milky Way Satellite Census. II. Galaxy-Halo Connection Constraints Including the Impact of the Large Magellanic Cloud*. 2020, ApJ, 893, 48.

E. O. Nadler, V. Gluscevic, K. K. Boddy, and R. H. Wechsler. *Constraints on Dark Matter Microphysics from the Milky Way Satellite Population*. 2019, ApJL, 878, L32.

E. O. Nadler, Y.-Y. Mao, G. M. Green, and R. H. Wechsler. *Modeling the Connection between Subhalos and Satellites in Milky Way-like Systems*. 2019, ApJ, 873, 34.

E. O. Nadler, Y.-Y. Mao, R. H. Wechsler, S. Garrison-Kimmel, and A. Wetzel. *Modeling the Impact of Baryons on Subhalo Populations with Machine Learning*. 2018, ApJ, 859, 129.

E. O. Nadler, A. Perko, and L. Senatore. *On the bispectra of very massive tracers in the Effective Field Theory of Large-Scale Structure*. 2018, JCAP, 1, 058.

E. O. Nadler, S. P. Oh, and S. Ji. *On the apparent power law in CDM halo pseudo-phase space density profiles*. 2017, MNRAS, 470, 500.

Publications

Y. Wang, **E. O. Nadler** *et al.* (SAGA Collaboration). *The SAGA Survey. V. Modeling Satellite Systems around Milky Way-mass Galaxies with Updated UniverseMachine*. 2404.14500 (ApJ submitted).
- Major contributions: Interpreted galaxy–halo connection constraints; developed modeling pipeline.

M. Geha *et al.* (SAGA Collaboration, incl. **E. O. Nadler**). *The SAGA Survey. IV. The Star Formation Properties of 101 Satellite Systems around Milky Way-mass Galaxies*. 2404.14499 (ApJ submitted).

Y.-Y. Mao *et al.* (SAGA Collaboration, incl. **E. O. Nadler**). *The SAGA Survey. III. A Census of 101 Satellite Systems around Milky Way-mass Galaxies*. 2404.14498 (ApJ submitted).

D. Buch, **E. O. Nadler**, R. H. Wechsler, and Y.-Y. Mao. *Milky Way-est: Cosmological Zoom-in Simulations with Large Magellanic Cloud and Gaia-Sausage-Enceladus Analogs*. 2404.08043 (ApJ submitted).
- Major contributions: Conceptualization; co-developed zoom-in simulation pipeline and analysis.

S. Ando, S. Horigome, **E. O. Nadler**, D. Yang, and H.-B. Yu. *SASHIMI-SIDM: Semi-analytical subhalo modelling for self-interacting dark matter at sub-galactic scales*. 2403.16633 (JCAP submitted).
- Major contributions: Analytic prediction for core-collapse fraction and interpretation of SIDM models.

X. Du *et al.* (incl. **E. O. Nadler**). *Tidal evolution of cored and cuspy dark matter halos*. 2403.09597 (PRD submitted).

P. Mansfield, E. Darragh-Ford, Y. Wang, **E. O. Nadler**, and R. H. Wechsler. *Symfind: Addressing the Fragility of Subhalo Finders and Revealing the Durability of Subhalos*. 2308.10926 (ApJ submitted).

E. Kado-Fong *et al.* (SAGA Collaboration, incl. **E. O. Nadler**). *SAGAbg I: A Near-unity Mass loading Factor in Low-mass Galaxies via their Low-redshift Evolution in Stellar Mass, Oxygen Abundance, and Star Formation Rate*. 2024, ApJ, 966, 129.

N. Ahvazi, A. Benson, L. V. Sales, **E. O. Nadler** *et al. A comprehensive model for the formation and evolution of the faintest Milky Way dwarf satellites*. 2024, MNRAS, 529, 3387.
- Major contributions: Interpreted galaxy–halo connection and Milky Way satellite predictions.

N. Glennon, N. Musoke, **E. O. Nadler**, C. Prescod-Weinstein, and R. H. Wechsler. *Dynamical friction in self-interacting ultralight dark matter*. 2024, PRD, 109, 063501.

D. Yang, **E. O. Nadler**, H.-B. Yu, and Y.-M. Zhong. *A parametric model for self-Interacting dark matter halos*. 2024, JCAP, 2, 032.
- Major contributions: Ran cosmological SIDM simulations and interpreted comparisons to parametric model.

M. McNanna, K. Bechtol, S. Mau, **E. O. Nadler** *et al*. (DES Collaboration). *A Search for Faint Resolved Galaxies Beyond the Milky Way in DES Year 6: A New Faint, Diffuse Dwarf Satellite of NGC 55*. 2024, ApJ, 961, 126
- Major contributions: Developed dwarf galaxy population predictions and interpreted NGC 55 satellite.

P. Hopkins, **E. O. Nadler**, M. Grudić, X. Shen *et al*. *Novel Conservative Methods for Adaptive Force Softening in Collisionless and Multi-Species N-Body Simulations*. 2023, MNRAS, 525, 5951.
- Major contributions: Conceptualized softening algorithms and interpreted small-scale structure results.

E. Darragh-Ford *et al*. (DESI Collaboration, incl. **E. O. Nadler**). *Target Selection and Sample Characterization for the DESI LOW-Z Secondary Target Program*. 2023, ApJ, 954, 149.

R. An, V. Gluscevic, **E. O. Nadler**, and Y. Zhang. *Can Neutrino Self-interactions Save Sterile Neutrino Dark Matter?* 2023, ApJL, 954, L18.
- Major contributions: Developed framework for sterile neutrino constraints.

A. Banerjee, S. Das, A. Maharana, **E. O. Nadler**, and R. K. Sharma. *Nonthermal warm dark matter limits from small-scale structure*. 2023, PRD, 108, 043518.
- Major contributions: Derived small-scale structure constraints and interpreted results.

W. Cerny *et al*. (DELVE Collaboration, incl. **E. O. Nadler**). *Six More Ultra-Faint Milky Way Companions Discovered in the DECam Local Volume Exploration Survey*. 2023, ApJ, 953, 1.

D. Yang, **E. O. Nadler**, and H.-B. Yu. *Strong Dark Matter Self-interactions Diversify Halo Populations Within and Surrounding the Milky Way*. 2023, ApJ, 949, 67.
- Major contributions: Performed cosmological SIDM simulations and interpreted dwarf galaxy predictions.

S. Yang, X. Du, Z. C Zeng, A. Benson, F. Jiang, **E. O. Nadler** *et al*. *Gravothermal Solutions of SIDM Halos: Mapping from Constant to Velocity-dependent Cross Section*. 2023, ApJ, 946, 47.

S. Wagner-Carena, J. Aalbers, S. Birrer, **E. O. Nadler** *et al*. *From Images to Dark Matter: End-To-End Inference of Substructure From Hundreds of Strong Gravitational Lenses*. 2023, ApJ, 942, 75.

T. Driskell, **E. O. Nadler**, J. Mirocha, A. Benson, K. K. Boddy *et al*. *Structure formation and the global 21-cm signal in the presence of Coulomb-like dark Matter-baryon interactions*. 2022, PRD, 106, 103525.
- Major contributions: Interpreted structure formation predictions for interacting dark matter models.

N. Glennon, **E. O. Nadler**, N. Musoke, A. Banerjee, C. Prescod-Weinstein, and R. H. Wechsler. *Tidal disruption of solitons in self-interacting ultralight axion dark matter*. 2022, PRD, 105, 123540.
- Major contributions: Conceptualized and interpreted soliton tidal disruption simulations.

S. Mau, **E. O. Nadler**, R. H. Wechsler, A. Drlica-Wagner, K. Bechtol *et al*. (DES Collaboration). *Milky Way Satellite Census. IV. Constraints on Decaying Dark Matter from Observations of Milky Way Satellite Galaxies*. 2022, ApJ, 932, 128.
- Major contributions: Performed cosmological decaying dark matter simulations and derived constraints.

J. Bhattacharyya, S. Adhikari, A. Banerjee, S. More, A. Kumar, **E. O. Nadler** *et al*. *The Signatures of Self-Interacting Dark Matter and Subhalo Disruption on Cluster Substructure*. 2022, ApJ, 932, 30.

J. F. Wu, J. E. G. Peek, E. J. Tollerud, Y.-Y. Mao, **E. O. Nadler** *et al*. *Extending the SAGA Survey (xSAGA) I: Satellite Radial Profiles as a Function of Host Galaxy Properties*. 2022, ApJ, 927, 121.

D. Nguyen, D. Sarnaaik, K. K. Boddy, **E. O. Nadler**, and V. Gluscevic. *Observational constraints on dark matter scattering with electrons*. 2021, PRD, 104, 103521.

A. Drlica-Wagner *et al.* (DELVE Collaboration, incl. **E. O. Nadler**). *The DECam Local Volume Exploration Survey: Overview and First Data Release*. 2021, ApJS, 256, 2.

Y. Wang, **E. O. Nadler**, Y.-Y. Mao, S. Adhikari, R. H. Wechsler *et al.* UniverseMachine: *Predicting Galaxy Star Formation over Seven Decades of Halo Mass with Zoom-in Simulations*. 2021, ApJ, 915, 116.
- Major contributions: Interpreted dwarf galaxy star formation history predictions; analyzed simulations.

E. Darragh-Ford, **E. O. Nadler**, S. McLaughlin, and R. H. Wechsler. *Searching for Dwarfs in Gaia DR2 Phase-space Data using Wavelet Transforms*. 2021, ApJ, 915, 48.
- Major contributions: Piloted and developed search algorithm; predicted number of detected dwarfs.

K. Maamari, V. Gluscevic, K. K. Boddy, **E. O. Nadler**, and R. H. Wechsler. *Bounds on velocity-dependent dark matter–proton scattering from Milky Way satellite abundance*. 2021, ApJL, 907, L46.
- Major contributions: Developed numerical techniques to constrain interacting dark matter models.

Y.-Y. Mao, M. Geha, R. H. Wechsler, B. Weiner, E. J. Tollerud, **E. O. Nadler** *et al.* *The Saga Survey. II. Building a Statistical Sample of Satellite Systems around Milky Way-like Galaxies*. 2021, ApJ, 907, 85.
- Major contributions: Provided theoretical predictions for SAGA satellite populations and interpreted results.

A. Drlica-Wagner, K. Bechtol, S. Mau, M. McNanna, **E. O. Nadler** *et al.* (DES Collaboration). *Milky Way Satellite Census. I. The Observational Selection Function for Milky Way Satellites in DES Y3 and Pan-STARRS DR1*. 2020, ApJ, 893, 47.
- Major contributions: Developed machine-learning model of satellite detection sensitivity; analyzed simulations.

S. Mau *et al.* (DELVE Collaboration, incl. **E. O. Nadler**). *Two Ultra-Faint Milky Way Stellar Systems Discovered in Early Data from the DECam Local Volume Exploration Survey*. 2020, ApJ, 890, 136.

C. E. Martínez-Vázquez *et al.* (DES Collaboration, incl. **E. O. Nadler**). *Search for RR Lyrae stars in DES ultrafaint systems: Grus I, Kim 2, Phoenix II, and Grus II*. 2019, MNRAS, 490, 2183.

K. M. Stringer *et al.* (DES Collaboration, incl. **E. O. Nadler**). *Identification of RR Lyrae stars in multiband, sparsely-sampled data from the Dark Energy Survey using template fitting and Random Forest classification*. 2019, AJ, 158, 16.

White Papers

J. Han *et al.* *NANCY: Next-generation All-sky Near-infrared Community surveY*. 2023, 2306.11784.

A. Drlica-Wagner *et al.* *Report of the Topical Group on Cosmic Probes of Dark Matter for Snowmass 2021*. 2022, 2209.08215

A. Banerjee *et al.* *Snowmass2021 Cosmic Frontier White Paper: Cosmological Simulations for Dark Matter Physics*. 2022, 2203.07049
- Major contributions: Developed simulation algorithm section and flowchart for tests of dark matter physics.

K. Bechtol *et al.* *Snowmass2021 Cosmic Frontier White Paper: Dark Matter Physics from Halo Measurements*. 2022, 2203.07354.
- Major contributions: Developed ultra-faint dwarf galaxy section and power spectrum visualization.

Y.-Y. Mao *et al.* *Snowmass2021: Vera C. Rubin Observatory as a Flagship Dark Matter Experiment*. 2022, 2203.07252.

K. Boddy *et al.* *Astrophysical and Cosmological Probes of Dark Matter*. 2022, 2203.06380.

S. Gezari *et al.* *R2-D2: Roman and Rubin – From Data to Discovery*. 2022, 2202.12311.

V. Gluscevic *et al.* *Cosmological Probes of Dark Matter Interactions: The Next Decade*. 2019, 1903.05140.

J. Simon *et al.* *Dynamical Masses for a Complete Census of Local Dwarf Galaxies*. 2019, 1903.047435.

K. Bechtol *et al.* *Dark Matter Science in the Era of LSST*. 2019, 1903.04425.

A. Drlica-Wagner *et al.* *Probing the Fundamental Nature of Dark Matter with the Large Synoptic Survey Telescope*. 2019, 1902.01055.
- Major contributions: Developed dwarf galaxy section and forecasted dark matter constraints.

Interdisciplinary Publications

D. Guilbeault, S. Delecourt, T. Hull, B. S. Desikan, M. Chu, and **E. O. Nadler**. *Online images amplify gender bias*. 2024, Nature, 626, 1049.

E. O. Nadler, E. Darragh-Ford, B. S. Desikan *et al*. *Divergences in Color Perception between Deep Neural Networks and Humans*. 2023, Cognition, 241, 105621.

M. Chu, B. S. Desikan, **E. O. Nadler** *et al*. *Signal in Noise: Exploring Meaning Encoded in Random Character Sequences with Character-Aware Language Models*. 2022, Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics, 7120

B. S. Desikan, T. Hull, **E. O. Nadler** *et al*. `comp-syn`: *Perceptually Grounded Word Embeddings with Color.* 2020, Proceedings of the 28th International Conference on Computational Linguistics, 1744.

D. Guilbeault, **E. O. Nadler** *et al*. *Color associations in abstract semantic domains.* 2020, Cognition, 201, 104306.