

Ethan Nadler | Curriculum Vitae

Carnegie Observatories & University of Southern California
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Research

Galaxy Formation.....

- Testing formation and evolution mechanisms for systems near the galaxy formation threshold;
- Empirically and semi-analytically modeling the faint-end galaxy–halo connection.

Dark Matter.....

- Modeling the impact of dark matter microphysics on small-scale structure observables;
- Simulating cosmic structure beyond CDM using high-resolution zoom-in simulations.

Near-field Cosmology.....

- Reconstructing primordial density fluctuations from nearby dwarf galaxy populations;
- Combining near-field, strong lensing, and high-redshift data to search for dark halos.

Positions

University of California, San Diego

2025–

Assistant Professor, Department of Astronomy & Astrophysics

Carnegie Observatories & University of Southern California

2021–24

Joint Postdoctoral Research Fellow, CTAC & Department of Physics and Astronomy

Education

Stanford University

2021

Ph.D., Physics (Advisor: Risa H. Wechsler)

Thesis: [Faint Galaxies and Small Halos: Probes of Galaxy Formation and Dark Matter](#)

University of California, Santa Barbara

2016

B.S., Physics (Advisor: S. Peng Oh)

Thesis: Universality in the Structure and Abundance of Dark Matter Halos

Grants

NSF Astronomy & Astrophysics Research Grants (PI; \$419,979)

2024–

Collaborative Research: Reconstructing Primordial Density Fluctuations with Near-field Cosmology

UC San Diego School of Physical Sciences DEI Grant (PI; \$2,500)

2024–

The Preuss School + UCSD Astronomy & Astrophysics: Dark Matter & Scientific Programming

Carnegie DEI Grant (PI; \$1,500)

2022–24

CreateNow + Carnegie: Dark Matter & Data Visualization

Scientific Collaborations

Satellites Around Galactic Analogs Survey: Member

2019–

DECam Local Volume Exploration 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

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| Faculty Fellow: San Diego Supercomputing Center | 2025– |
| 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 |
| Worster Summer Research Fellow: UCSB Department of Physics | 2015 |

Mentoring

Undergraduate Thesis Advisor (current in bold) 2024–

- **Sophia Um**, UCSD: Environmental dependence of dwarf galaxy star formation

Graduate Student Co-advisor (current in bold) 2021–

- Niusha Ahvazi, UCR → UVA: 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 (see [W. Crumrine, E. O. Nadler et al. 2024](#));
- 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, 2024](#));
- 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](#));
- Sidney Mau, Stanford: Constraining the dark matter particle lifetime with dwarf galaxies (see [S. Mau, E. O. Nadler et al. 2022](#));
- **Siddhesh Raut**, USC: Self-interacting dark matter halo gravothermal evolution modeling;
- **Yunchong Wang**, Stanford → MIT: Empirically modeling dwarf galaxy star formation histories (see [Y. Wang, E. O. Nadler et al. 2021, 2024a](#); [Y. Wang, P. Mansfield, E. O. Nadler et al. 2024b](#));

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;
- Ezra Msolla (Simons–NSBP Scholar), UToronto '25: Neutrino self-interaction impact on cosmic structure
- 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

Professor (UCSD) 2025–

- *ASTR 2. Galaxies and the Universe.*

Guest Lecturer (USC) 2022

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

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| Textbook Co-Author (UC Davis) | 2022 |
| ◦ <i>A Cosmology Workbook</i> : 31: Structure Formation , 32: Galaxy Formation . | |
| Teaching Assistant (Stanford) | 2017–21 |
| ◦ <i>Structure Formation & Galaxy Formation, Modern Astrophysics, Cosmology & Extragalactic Astrophysics, Origin & Development of the Cosmos, Electricity & Magnetism.</i> | |
| Course Assistant (UCSB) | 2015–16 |
| ◦ <i>Relativistic Quantum Mechanics, Kinetic Theory & Relativity, Mechanics & Waves, Newtonian Mechanics.</i> | |
| Tutor (UCSB Campus Learning Assistance Services) | 2015–16 |
| ◦ Held biweekly supplementary lectures for <i>Basic Physics, Linear Algebra, Differential Equations</i> . | |

Service

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| Conference Coordinator (KITP, Cosmic Signals of Dark Matter Physics: New Synergies) | 2024 |
| Proposal Review Panel Member (NASA ADAP) | 2022 |
| USC Physics Climate Committee (Postdoctoral & Staff Representative) | 2021– |
| Journal Referee (<i>ApJ</i> , <i>ApJL</i> , <i>Astropart. Phys.</i> , <i>JCAP</i> , <i>MNRAS</i> , <i>Nature</i> , <i>PRL</i> , <i>Language & Cognition</i>) | 2019– |

Outreach

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| Carnegie Observatories Lectures at the Huntington (Speaker) [video] | 2023 |
| 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 |
| UCSB Physics NSF REU (Speaker) | 2021– |
| San Mateo County Astronomical Society (Speaker) [video] | 2021 |
| Astronomy on Tap San Francisco (Speaker and Volunteer) | 2018–20 |
| Stanford Future Advancers of Science and Technology (Physics Mentor) | 2017–19 |

Media

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| 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

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| Revealing Dark Matter and Galaxy Formation with Small-Scale Structure | 2024– |
| UC Santa Cruz, Astronomy & Astrophysics Colloquium | |
| UC Merced, Physics Colloquium | |
| Carnegie Observatories, Colloquium | |
| Rice, Astronomy & Astrophysics Seminar | |
| UC San Diego, Astrophysics Colloquium | |
| Caltech, TAPIR Seminar | |

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| <i>COZMIC: Cosmological Zoom-in Simulations with Initial Conditions Beyond CDM</i> Princeton University, Dark Cosmos Seminar Carnegie Observatories, GalFRESKA [slides] PACIFIC Conference | 2024 |
| <i>Review: What can Dwarf Galaxies Reveal about the Nature of Dark Matter?</i> Durham, Small Galaxies, Cosmic Questions - II [slides] | 2024 |
| <i>Dark Matter Physics in the Sky</i> KITP Blackboard Talk [video] | 2024 |
| <i>Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys</i> Dark Energy Science Collaboration Seminar LBNL, Fundamental Physics from Future Spectroscopic Surveys [slides] | 2024 |
| <i>SIDM (Sub)halos in Milky Way and Strong Lens Analogs</i> Pollica Physics Centre, Self-Interacting Dark Matter Models, Simulations and Signals [slides] | 2023 |
| <i>Cosmological Simulations with Novel Dark Matter Physics</i> UC Riverside, GalFRESKA UCLA, Dark Matter 2023 [slides] KICP, Astronomy & Astrophysics Seminar | 2023 |
| <i>The Faint End of the Galaxy–Halo Connection</i> KITP, Building a Physical Understanding of Galaxy Evolution [video] | 2023 |
| <i>Dark Matter Constraints from Small-Scale Structure</i> CERN Theory Institute, New Physics from Galaxy Clustering [video] , [slides] | 2022 |
| <i>Symphony: Cosmological Zoom-in Simulations over Four Decades of Host Halo Mass</i> Caltech, GalFRESKA [slides] | 2022 |
| <i>Dark Matter Physics + Rubin LSST</i> LSST Dark Energy Science Collaboration, CosmoPalooza | 2022 |
| <i>Towards Precision Near-Field Cosmology</i> KIPMU, Astro Lunch Seminar UC Riverside, Astronomy Seminar Fermilab, Cosmic Physics Center Seminar [video] | 2021 |
| <i>Dark Matter Constraints from a Unified Analysis of Strong Lenses and Satellite Galaxies</i> LSST DESC Dark Matter Working Group Virginia Tech Center for Neutrino Physics, Journal Club | 2021 |
| <i>The Faintest Galaxies and their Dark Matter Halos</i> 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] | 2020–21 |
| <i>Milky Way Satellites: Probes of Dark Matter Microphysics</i> University of Chicago, Cosmic Controversies [slides] | 2019 |

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, R. An, D. Yang, H.-B. Yu, A. Benson, and V. Gluscevic. *COZMIC. III. Cosmological Zoom-in Simulations of SIDM with Suppressed Initial Conditions*. [2412.13065](#) (ApJ submitted).

E. O. Nadler, R. An, V. Gluscevic, A. Benson, and X. Du. *COZMIC. I. Cosmological Zoom-in Simulations with Initial Conditions Beyond CDM*. [2410.03635](#) (ApJ submitted).

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*. 2024, [ApJ](#), **967**, 61.

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

R. An, **E. O. Nadler**, A. Benson, and V. Gluscevic. *COZMIC. II. Cosmological Zoom-in Simulations with Fractional non-CDM Initial Conditions*. [2411.03431](#) (ApJ submitted).

- Major contributions: Developed fractional simulation pipeline and interpreted constraints.

[T. Driskell](#), **E. O. Nadler**, A. Benson, and V. Gluscevic. *Population synthesis and astrophysical inference for high- z JWST galaxies*. [2410.11680](#) (MNRAS submitted).

- Major contributions: Conceptualized likelihood framework and interpreted astrophysical constraints.

X. Zhang, H.-B. Yu, D. Yang, and **E. O. Nadler**. *The GD-1 stellar stream perturber as a core-collapsed self-interacting dark matter halo*. [2409.19493](#) (ApJL in press).

- Major contributions: Developed subhalo resimulation method and interpreted GD-1 results.

Y. Wang, P. Mansfield, **E. O. Nadler**, E. Darragh-Ford, and R. H. Wechsler. *EDEN: Exploring Disks Embedded in N-body simulations of Milky-Way-mass halos from Symphony*. [2408.01487](#) (ApJ submitted).

- Major contributions: Developed disk potential algorithm and growth model; interpreted disruption results.

[W. Crumrine](#), **E. O. Nadler**, R. An, and V. Gluscevic. *Dark Matter Coupled to Radiation: Limits from the Milky Way Satellites*. [2406.19458](#) (PRD in press).

- Major contributions: Interpreted improvement and scaling of dark matter–radiation scattering constraints.

D. Yang, **E. O. Nadler**, and H.-B. Yu. *Testing the parametric model for self-interacting dark matter using matched halos in cosmological simulations*. [2406.10753](#) (Physics of the Dark Universe submitted).

- Major contributions: Ran cosmological SIDM simulations and interpreted performance of parametric model.

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.

Y. Wang, **E. O. Nadler et al.** (SAGA Collaboration). *The SAGA Survey. V. Modeling Satellite Systems around Milky Way–mass Galaxies with Updated UNIVERSEMACHINE*. 2024, [ApJ](#), **976**, 119.

- 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*. 2024, [ApJ](#), **976**, 118.

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*. 2024, [ApJ](#), **976**, 117.

E. Kado-Fong et al. (SAGA Collaboration, incl. **E. O. Nadler**). *SAGAbg II: The Low-mass Star-forming Sequence Evolves Significantly between $0.05 < z < 0.21$* . 2024, [ApJ](#), **976**, 83.

[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*. 2024, [ApJ](#), **971**, 79.

- Major contributions: Conceptualization; co-developed zoom-in simulation pipeline and analysis.

P. Mansfield, E. Darragh-Ford, Y. Wang, **E. O. Nadler**, B. Diemer, and R. H. Wechsler. *SYMFIND: Addressing the Fragility of Subhalo Finders and Revealing the Durability of Subhalos*. 2024, [ApJ](#), **970**, 178.

X. Du et al. (incl. **E. O. Nadler**). *Tidal evolution of cored and cuspy dark matter halos*. 2024, [PRD](#), **110**, 023019.

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 multispecies 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. Sarnaik, 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.