

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 (AAG) 2024–

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

PI; \$419,979

Carnegie DEI Grant 2022–24

CreateNow + Carnegie: Dark Matter & Data Visualization

PI; \$1,500

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

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 Unuverse.*

Guest Lecturer (USC) 2022

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

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

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

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

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

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	

<i>COZMIC: Cosmological Zoom-in Simulations with Initial Conditions Beyond CDM</i> Princeton University, Dark Cosmos Seminar Carnegie Observatories, GalFRESCA [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> 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, GalFRESCA 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, GalFRESCA [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] 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	2019

First & Co-Authored Publications

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

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 submitted).

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

E. Kado-Fong *et al.* (SAGA Collaboration, incl. **E. O. Nadler**). *SAGAbg II: the Low-Mass Star-Forming Sequence Evolves Significantly Between $0.05 < z < 0.21$* . [2409.12221](#) (ApJ submitted).

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 submitted).

- 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.

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 in press).

- 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 in press).

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 in press).

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.

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. Darraugh-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.