Ethan Nadler | Curriculum Vitae

University of California, San Diego

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Research

Galaxy Formation
– Understanding how the faintest galaxies formed and evolved;
– Modeling the connection between dwarf galaxies and dark matter halos.

Dark Matter
– Searching for signals of dark matter microphysics in small-scale structure data;
– Simulating structure formation beyond CDM using high-resolution simulations.

Near-field Cosmology
– Reconstructing primordial density fluctuations from local dwarf galaxy surveys;
– Combining dwarf galaxies and strong lensing to search for galaxy–free 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 & USC 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 Grant (PI; $419,979) 2024–
Collaborative Research: Reconstructing Primordial Density Fluctuations using Near-Field Cosmology

UC San Diego School of Physical Sciences Outreach Grant (PI; $2,500) 2024–25
The Preuss School + UCSD Astronomy & Astrophysics: Dark Matter & Scientific Programming

Carnegie Outreach Grant (PI; $1,500) 2022–24
CreateNow + Carnegie: Dark Matter & Data Visualization

Scientific Collaborations

Rubin LSST Dark Energy Science Collaboration: Co-Convener, Dark Matter Working Group 2025–

Satellites Around Galactic Analogs Survey: Member 2019–

DECam Local Volume Exploration Survey: Member 2019–

Rubin LSST Dark Energy Science Collaboration: Member 2018–

Dark Energy Survey: Member, Milky Way Working Group 2018–

Fellowships & Awards

LSST Scialog Fellow: Research Corporation for Science Advancement — *2025*
ACCESS Allocation: Optimizing Next-generation Cosmological Zoom-in Simulations — *2025–*
Faculty Fellow: San Diego Supercomputer 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 — *2020–22*
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*

Teaching

Professor (UCSD) — *2025–*
- ASTR 2: *Galaxies and the Universe* (Spring '25, '26);
- ASTR 122: *Physical Cosmology* (Winter '26).

Guest Lecturer (USC) — *2022*
- *Advanced Cosmology*: Lecture on *Structure Formation & Galaxies*.

Textbook Co-Author (UC 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.*

Service

Workshop Organizer (Spec-S5 Dark Matter Meeting, KICP) — *2025*
Conference Organizer (GalFRESCA, UCSD) — *2025*
ArXiv Hour Committee Chair (UCSD Astronomy & Astrophysics) — *2025–*
Postdoctoral Scholar Mentor (UCSD Astronomy & Astrophysics) — *2025–*
Graduate Advisory Committee Member (UCSD Astronomy & Astrophysics) — *2025–*
Doctoral Committee Member (UCSD Physics) — *2025–*
Graduate Admissions Committee Member (UCSD Astronomy & Astrophysics) — *2024–25*
Conference Coordinator (Cosmic Signals of Dark Matter Physics: New Synergies, KITP) — *2024*
Proposal Review Panel Member (*NASA ADAP, NSF AAG*) — *2022–*
USC Physics and Astronomy Climate Committee (Postdoctoral & Staff Representative) — *2021–24*
Journal Referee (*ApJ, ApJL, Astronomy & Astrophysics, Astroparticle Physics, JCAP, MNRAS, Nature, PRD, PRL, Reviews of Modern Physics, Language & Cognition, Lingua*) — *2019–*

Outreach

Lyncean Group of San Diego Lecture (Speaker) — *2025*
UCSD STARTastro: Astronomy Workshop (Speaker) — *2025*
UCSD Stellar Beginnings: Astronomy & Astrophysics Department Launch (Speaker) — *2025*
UCSD Preuss High School: Dark Matter & Scientific Programming (Course Instructor) — *2025*
Carnegie Observatories Lectures at the Huntington (Speaker) — *2023*
USC Hybrid High School: Dark Matter & Data Visualization (Course Instructor) — *2022*
UCSB Physics NSF REU (Speaker) — *2021–25*
San Mateo County Astronomical Society (Speaker) — *2021*

Mentoring

Postdoc Advisor (**bold**: current)   *2025–*

- **Sandip Roy**, UCSD Schmidt AI Fellow: Emulating small-scale dark matter structure

Graduate Student Advisor (**bold**: current; †: thesis student)   *2025–*

- †**Ollie Jackson**, UCSD: Strong lensing dark matter substructure modeling and constraints
- †**Wisha Wanichwecharungruang**, UCSD: Near-field cosmology using semi-analytic models
- †**Zewei Wu**, UCSD: Hydrodynamic simulations of ultra-faint dwarf satellite galaxies

Undergraduate Student Advisor (**bold**: current; †: thesis student)   *2025–*

- **Stephen Canino**, UCSD '28: Subhalo abundance evolution in zoom-in simulations
- **Kimmy Dang**, Yale '28: Large Magellanic Cloud satellite populations across environments
- Steve Du, UCSD '25: Sterile neutrino dark matter constraints from small-scale structure
- **Bocheng Feng**, Peking '26: Dark matter halo pseudo phase space density profiles
- **Roxanne Lai**, UCSD '28: Subhalo abundance evolution in zoom-in simulations
- †**Sophia Um**, UCSD, '26: Environmental dependence of dwarf galaxy star formation

Graduate Student Co-advisor (**bold**: current)   *2021–*

- Niusha Ahvazi, UCR '24 → UVA: Semi-analytic modeling of dwarf galaxy formation and evolution
  (see N. Ahvazi, A. Benson, L. Sales, E. O. Nadler *et al.* 2024);
- **Arif Chu**, USC: Dark matter–baryon scattering constraints from Milky Way satellite galaxies;
- **Wendy Crumrine**, USC: Constraining dark matter–radiation interactions with small-scale structure
  (see W. Crumrine, E. O. Nadler *et al.* 2024);
- **Tara Dacunha**, Stanford: Satellite galaxy disruption and stellar stream modeling;
- Elise Darragh-Ford, Stanford '24: Searching for dwarf galaxies and stellar streams in *Gaia* data
  (see E. Darragh-Ford, E. O. Nadler *et al.* 2021);
- **Trey Driskell**, USC '25: Semi-analytic modeling of structure and galaxy formation
  (see T. Driskell, E. O. Nadler *et al.* 2022, 2024);
- Noah Glennon, UNH '23: 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);
- **Demao Kong**, UCR: Modeling SIDM subhalo populations in the Milky Way and strong lens analogs
  (see D. Kong, H.-B. Yu, E. O. Nadler *et al.* 2025; D. Kong, E. O. Nadler, H.-B. Yu 2025);
- Sidney Mau, Stanford '25: 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 '24: 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);
- **James Wen**, USC: Hydrodynamic simulations of dark matter–baryon interactions;
- Xingyu Zhang, Tsinghua '25: Modeling stellar stream perturbers as SIDM subhalos
  (see X. Zhang, H.-B. Yu, D. Yang, and E. O. Nadler 2025).

Undergraduate, Post-baccalaureate, & High-school Student Co-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: Zoom-in simulation visualizations;
- 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;

Media

Astronomy Magazine, *How Weird is the Milky Way?*	*2025*
USC Today, *Scientists code Milky Way twin galaxies to better understand dark matter*	*2025*
UC San Diego Today, *A New Astronomy Programs Helps Young Minds Tackle Big Questions*	*2025*
UC San Diego Today, *Do "Completely Dark" Dark Matter Halos Exist?*	*2025*
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*

Presentations

Dark Matter Insights from Small-scale Structure UC San Diego, High Energy Physics Seminar Stony Brook/Brookhaven, YITP Seminar	*2025–*
Which Dark Matter Halos Form Stars? UCSC 2025 Galaxy Workshop [video]	*2025–*
Review: Satellite Galaxies and Stellar Streams as Probes of SIDM Valencia Instituto de Física Corpuscular, Small-scale Structure of the Universe & SIDM [slides]	*2025*
Revealing Dark Matter and Galaxy Formation with Small-Scale Structure University of Washington, Astronomy Colloquium Stanford/KIPAC, Astrophysics Colloquium [video] UCSC, Astronomy & Astrophysics Colloquium UC Merced, Physics Colloquium Carnegie Observatories, Colloquium Rice, Astronomy & Astrophysics Seminar UC San Diego, Astrophysics Colloquium Caltech, TAPIR Seminar	*2024–25*
COZMIC: Cosmological Zoom-in Simulations with Initial Conditions Beyond CDM UCLA, Dark Matter 2025 [slides] Princeton, Dark Cosmos Seminar Carnegie Observatories, GalFRESCA [slides] PACIFIC Conference	*2024–25*
Review: What can Dwarf Galaxies Reveal about the Nature of Dark Matter? Dynamical Tracers of the Nature of Dark Matter [slides] Durham, Small Galaxies, Cosmic Questions - II [slides]	*2024–25*
Dark Matter Physics in the Sky KITP Blackboard Talk [video]	*2024*
Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys LSST DESC, Seminar LBNL, Fundamental Physics from Future Spectroscopic Surveys [slides]	*2024*

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, 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 DESC, CosmoPalooza [slides]

Towards Precision Near-Field Cosmology 2021–22
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
Caltech, TAPIR Seminar
Harvard-Smithsonian Center for Astrophysics, GCSP Seminar [video]
International Centre for Theoretical Sciences, Less Travelled Path of Dark Matter [video, slides]
UC Berkeley Center for Cosmological Physics, Cosmology Seminar [slides]
STScI, The Local Group: Assembly and Evolution
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-authored Publications (Google Scholar h-index: 33; *: ≥ 100 Google Scholar citations)

20. **E. O. Nadler**, V. Gluscevic, and A. Benson. *The Effects of Linear Matter Power Spectrum Enhancement on Dark Matter Substructure.* 2507.16889 (ApJ in press).

19. **E. O. Nadler**, D. Kong, D. Yang, and H.-B. Yu. *SIDM Concerto: Compilation and Data Release of Self-interacting Dark Matter Zoom-in Simulations.* 2025, ApJ, 991, 69.

18. **E. O. Nadler**, R. An, D. Yang, H.-B. Yu, A. Benson, and V. Gluscevic. *COZMIC. III. Cosmological Zoom-in Simulations of Self-interacting Dark Matter with Suppressed Initial Conditions.* 2025, ApJ, 986, 129.

17. **E. O. Nadler**, R. An, V. Gluscevic, A. Benson, and X. Du. *COZMIC. I. Cosmological Zoom-in Simulations with Initial Conditions Beyond Cold Dark Matter.* 2025, ApJ, 986, 127.

16. **E. O. Nadler** & A. Benson. *Semianalytic model for decaying dark matter halos.* 2025, PRD, 111, 103522.

15. **E. O. Nadler**. *The Impact of Molecular Hydrogen Cooling on the Galaxy Formation Threshold.* 2025, ApJL, 983, L23.

14. **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.

13. **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.

12. **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.

11. **E. O. Nadler**, A. Benson, T. Driskell, X. Du, and V. Gluscevic. *Growing the first galaxies' merger trees.* 2023, MNRAS, 521, 3201.

10. **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.

*9. **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.

*8. **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.

7. **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.

*6. **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.

*5. **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.

*4. **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.

3. **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.

2. **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.

1. **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.

Co-authored Publications (*: $\geq$ 100 Google Scholar citations)

51. D. Kong, **E. O. Nadler**, and H.-B. Yu. *Strong Lensing Perturbers from the SIDM Concerto Suite.* 2510.01491 (PRD submitted).
   ○ Major contributions: Interpreted environmental dependence of SIDM predictions and comparisons to data.

50. Y. Asali *et al.* (SAGA Survey, incl. **E. O. Nadler**). *The SAGA Survey. VI.: The Size–Mass Relation for Low-Mass Galaxies Across Environments.* 2509.25335 (ApJ submitted).

49. E. Kado-Fong *et al.* (SAGA Survey, incl. **E. O. Nadler**). *SAGAbg III: Environmental Stellar Mass Functions, Self-Quenching, and the Stellar-to-Halo Mass Relation in the Dwarf Galaxy Regime.* 2509.20444 (ApJ in press).

48. C. Y. Tan, A. Drlica-Wagner, A. B. Pace, W. Cerny, **E. O. Nadler** *et al.* (DELVE Collaboration). *DELVE Milky Way Satellite Census I: Satellite Population and Survey Selection Function.* 2509.12313 (ApJ submitted).
   ○ Major contributions: Interpreted empirical constraints on total Milky Way satellite population and its anisotropy.

47. D. Kong, H.-B. Yu, **E. O. Nadler** *et al.* *Novel Challenges in Tracking Self-Interacting Dark Matter Subhalos.* 2507.09799 (JCAP in press).
   ○ Major contributions: Conceptualized subhalo finder comparison and interpreted subhalo population results.

46. 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 galaxy–halo connection results.

45. D. C. Baxter, A. L. Coil, **E. O. Nadler** *et al.* *Quantifying the Impact of Incompleteness on Identifying and Interpreting Galaxy Protocluster Populations with the TNG-Cluster Simulation.* 2025, ApJ, 990, 225.

44. M. S. Fischer, K. Dolag, M. Garny, V. Gluscevic, F. Groth, and **E. O. Nadler**. *N-body simulations of dark matter-baryon interactions.* 2025, A&A 700, A145.

43. K. Tsiane, S. Mau, A. Drlica-Wagner, J. L. Carlin, P. S. Ferguson, K. Bechtol, **E. O. Nadler** *et al.* (DESC Collaboration). *Predictions for the Detectability of Milky Way Satellite Galaxies and Outer-Halo Star Clusters with the Vera C. Rubin Observatory.* 2025, OJAp, 8, 89.
   ○ Major contributions: Co-developed predictions for Rubin Milky Way satellite luminosity function constraints.

42. 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.* 2025, ApJ, 986, 147.
   ○ Major contributions: Co-developed disk potential simulation algorithm and interpreted disruption results.

41. R. An, **E. O. Nadler**, A. Benson, and V. Gluscevic. *COZMIC. II. Cosmological Zoom-in Simulations with Fractional non-CDM Initial Conditions.* 2025, ApJ, 986, 128
   ○ Major contributions: Developed pipeline for fractional non-CDM simulations and derived constraints.

40. 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.* 2025, JCAP, 2, 053.
   ○ Major contributions: Derived analytic prediction for core-collapsed fraction and interpreted subhalo results.

39. W. Crumrine, **E. O. Nadler**, R. An, and V. Gluscevic. *Dark matter coupled to radiation: Limits from the Milky Way satellites.* 2025, PRD, 111, 023530.
   ○ Major contributions: Co-developed and interpreted dark matter–radiation scattering constraints.

38. D. Yang, **E. O. Nadler**, and H.-B. Yu. *Testing the parametric model for self-interacting dark matter using matched halos in cosmological simulations.* 2025, Physics of the Dark Universe, 47, 101807.
   ○ Major contributions: Provided cosmological SIDM simulations and interpreted parametric model results.

37. 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.* 2025, ApJL, 978, L23.
   ○ Major contributions: Developed subhalo resimulation method and interpreted GD-1 results.

36. Y. Wang, **E. O. Nadler** *et al.* (SAGA Survey). *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; co-developed modeling pipeline.

35. M. Geha *et al.* (SAGA Survey, 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.

34. Y.-Y. Mao *et al.* (SAGA Survey, incl. **E. O. Nadler**). *The SAGA Survey. III. A Census of 101 Satellite Systems around Milky Way–mass Galaxies*. 2024, ApJ, 976, 117.

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

32. 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: Piloted constrained zoom-in simulations and co-developed analysis pipeline.

31. 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.

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

29. E. Kado-Fong *et al.* (SAGA Survey, 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.

28. 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.

27. 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.

26. 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 parametric model performance.

25. 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.

24. 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 cosmological simulation results.

23. 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.

22. 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 sterile neutrino limits and interpreted production mechanism constraints.

21. 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.

20. 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.

19. 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.

18. 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.

17. 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.

16. 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.

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- Major contributions: Conceptualized and interpreted soliton tidal disruption simulations.

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- Major contributions: Performed cosmological decaying dark matter simulations and derived constraints.

13. 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.

12. 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.

11. 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.

*10. 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.

9. 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.

8. 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.

7. S. Das & **E. O. Nadler**. *Constraints on the epoch of dark matter formation from Milky Way satellites*. 2021, PRD, 103, 043517.
- Major contributions: Derived and interpreted constraints on dark matter formation redshift.

6. 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.

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- Major contributions: Provided theoretical predictions for SAGA satellite populations and interpreted results.

*4. 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.

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2. 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.

1. K. M. Stringer *et al.* (DES Collaboration, incl. **E. O. Nadler**). *Identification of RR Lyrae Stars in Multi-band, Sparsely Sampled Data from the Dark Energy Survey Using Template Fitting and Random Forest Classification.* 2019, AJ, 158, 16.

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

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

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

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

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

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

3. J. Simon *et al.* *Dynamical Masses for a Complete Census of Local Dwarf Galaxies.* 2019, 1903.04743.

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

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

Book Reviews

1. **E. O. Nadler**. *Dark Matter: Evidence, Theory, and Constraints* (Book Review). 2025, Am. J. Phys 93, 763.

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

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3. 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

2. 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.

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