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–*
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

Osher Lifelong Learning Institute Astronomy & Astrophysics Master Class (Speaker) *2026*
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 (see B. Feng, E. O. Nadler *et al.* 2025)
- **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 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;
- 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 *2025–*
UC San Diego, High Energy Physics Seminar
Stony Brook/Brookhaven, YITP Seminar

Which Dark Matter Halos Form Stars? *2025–*
UCSC 2025 Galaxy Workshop [video]

Review: Satellite Galaxies and Stellar Streams as Probes of SIDM *2025*
Valencia Instituto de Física Corpuscular, Small-scale Structure of the Universe & SIDM [slides]

Revealing Dark Matter and Galaxy Formation with Small-Scale Structure *2024–25*
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

COZMIC: Cosmological Zoom-in Simulations with Initial Conditions Beyond CDM *2024–25*
UCLA, Dark Matter 2025 [slides]
Princeton, Dark Cosmos Seminar
Carnegie Observatories, GalFRESCA [slides]
PACIFIC Conference

Review: What can Dwarf Galaxies Reveal about the Nature of Dark Matter? *2024–25*
Dynamical Tracers of the Nature of Dark Matter [slides]
Durham, Small Galaxies, Cosmic Questions - II [slides]

Dark Matter Physics in the Sky *2024*
KITP Blackboard Talk [video]

Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys *2024*
LSST DESC, Seminar
LBNL, Fundamental Physics from Future Spectroscopic Surveys [slides]

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: 34; *: $\geq$ 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*. 2025, ApJ, 993, 17.

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)

53. B. Feng, **E. O. Nadler**, S. P. Oh, and S. Ju. *The Non-universal Pseudo Phase-Space Density Profiles of Symphony Host Halos*. 2511.19250 (MNRAS submitted).
- Major contributions: Piloted correlations between PPSD and halo properties and analysis pipeline.

52. E. Darragh-Ford & N. Garavito-Camargo *et al*. (incl. **E. O. Nadler**). *Shaping the Milky Way. II. The dark matter halo's response to the LMC's passage in a cosmological context*. 2511.02031 (ApJ submitted).

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. 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.

49. 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.

48. Y. Asali *et al*. (SAGA Survey, incl. **E. O. Nadler**). *The SAGA Survey. VI. The Size–Mass Relation for Low-mass Galaxies Across Environments.* 2025, ApJ, 995, 79.

47. 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.* 2025, ApJ, 994, 231.

46. D. Kong, H.-B. Yu, **E. O. Nadler** *et al*. *Novel challenges in tracking self-interacting dark matter subhalos*. 2025, JCAP, 10, 074.
- Major contributions: Conceptualized subhalo finder comparison and interpreted subhalo population 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.

15. 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.

14. 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.

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.

*5. Y.-Y. Mao, M. Geha, R. H. Wechsler, B. Weiner, E. J. Tollerud, **E. O. Nadler** *et al*. (SAGA Survey). *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.

*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.

*3. 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.

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

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

9. 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.

8. 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.

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.
- 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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6. **E. O. Nadler**, D. Guilbeault, S. Ringold, T. R. Williamson *et al*. *Statistical or Embodied? Comparing Colorseeing, Colorblind, Painters, and Large Language Models in their Processing of Color Metaphors*. 2025, Cognitive Science, 49, e70083.

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.

4. **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.

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.