

Yao-Yuan Mao

Curriculum Vitae

Department of Physics and Astronomy
University of Utah
115 S 1400 E, Salt Lake City, UT 84112, USA

yymao@astro.utah.edu
<https://yymao.github.io>
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RESEARCH AREAS

Topics: Dark matter. Cosmology. Galaxy formation and evolution. Low-mass galaxies.

Methods: Numerical simulations. Theoretical modeling. Astronomical surveys.

POSITIONS

University of Utah, Salt Lake City, UT, USA, Jul 2022–present

Assistant Professor of Physics and Astronomy

Rutgers, The State University of New Jersey, Piscataway, NJ, USA, Sep 2019–Jun 2022

NASA Einstein Fellow (NASA Hubble Fellowship Program), Physics and Astronomy

University of Pittsburgh, Pittsburgh, PA, USA, Aug 2016–Aug 2019

Samuel P. Langley PITT PACC Postdoctoral Fellow, Physics and Astronomy

EDUCATION

Stanford University, Stanford, CA, USA

Ph.D. in Physics, Jun 2016

Thesis: “Modeling the distribution of dark matter and its connection to galaxies”

Thesis advisor: Risa H. Wechsler

National Taiwan University, Taipei City, Taiwan

B.S. in Physics, with Minor in Atmospheric Sciences, Jun 2009

PUBLICATIONS

I have authored 70+ refereed journal papers, including 7 first-author papers, and 10+ second-author papers that were led by students for whom I served the primary advising role on those projects.

See the complete list of publications on [Page 9](#).

ADVISEES

University of Utah

My research group currently consists of two postdocs, one Ph.D. student, and three undergraduate students. Alumni of my research group include:

Abigail Coker (U of Utah, Master 2023)

University of Pittsburgh & Rutgers University

Catherine Fielder (Pittsburgh PhD '22), currently postdoc at Steward Obs./U of Arizona

I co-advised when Cat was a PhD student with Jeff Newman and Andrew Zentner

Kuan Wang (Pittsburgh PhD '21), currently postdoc at U Michigan

I co-advised when Kuan was a PhD student with Andrew Zentner

Ethan Nadler (Stanford PhD '21), currently postdoc at Carnegie Obs./USC

I co-advised when Ethan was a PhD student with Risa Wechsler

Stanford University

Benjamin Lehmann (Stanford B.S. '15), currently PhD candidate at UC Santa Cruz
 Marc Williamson (Stanford B.S. '15), currently PhD candidate at New York University
 Vincent Su (Stanford B.S. '16), currently PhD candidate at UC Berkeley
 I co-advised Ben, Marc, and Vincent when they were undergraduate students with Risa Wechsler

SCIENTIFIC COLLABORATIONS

Satellites Around Galactic Analogs (SAGA) Survey, 2013–present

Co-lead, 2019–present

Vera C. Rubin Observatory

US/Chile Community Commissioning Effort Program Team Member, 2022–present

Data Preview 0.1 and 0.2 Delegate, 2021–present

Rubin LSST Dark Energy Science Collaboration (LSST DESC), 2015–present

Science Release and Validation Working Group Co-convener, 2024–present

Dark Matter Working Group Co-convener, 2019–2022

Data Access Team Co-lead, 2020–2021

Collaboration Council Member, 2017–2021; Chair, 2019; Deputy Chair, 2021

Hack/Sprint Coordinator, 2017–2019

Builder, awarded in 2019

Full Member, promoted in 2017

Dark Energy Spectroscopic Instrument (DESI)

External Collaborator (leading the LOWZ Secondary Program), 2021–present

Member, 2016–2019

Southern Stellar Stream Spectroscopic Survey (S^5)

S^5 LOWZ project coordinator, 2018–present

DECam Local Volume Exploration (DELVE) Survey, 2019–present

Magellanic Satellites Survey (MagLiteS), 2016–2019

Dark Energy Survey (DES)

External Collaborator, 2018–2021

Participant, 2015–2016

AWARDS

- 2023 Research Mentor Award Nominee, Physics Undergraduate Student Advisory Committee, U of Utah
Pride Week Change Maker Award, University of Utah
- 2019 Einstein Fellowship, NASA Hubble Fellowship Program
- 2016 Samuel P. Langley Postdoctoral Fellowship, PITT PACC, University of Pittsburgh
- 2013 Paul Giddings Fellow, Kavli Institute for Particle Astrophysics and Cosmology
- 2012 Weiland Family Stanford Graduate Fellow, Stanford University

GRANTS

HST Cycle 31 General Observer

Funded Co-I (Utah share: \$10k, recommended; PI: K. B. W. McQuinn)

HST Cycle 30 Archival Researcher (June 2022)

Unfunded Co-I (PI: R. H. Wechsler)

NASA Hubble Fellowship (2019–2022, \$300k)
Scientific PI (Administrative PI: Eric Gawiser)
NSF Collaborative Research: The SAGA Project (2015–2018, \$64k)
Unfunded Co-I (PIs: M. Geha, R. H. Wechler)

OBSERVING PROPOSALS

HST Cycle 31 General Observer (6 orbits; August 2023)
Co-I (PI: K. B. W. McQuinn)
HST Cycle 29 Mid-cycle General Observer (3 orbits; March 2022)
Co-I (PI: K. B. W. McQuinn)
SALT: The SAGA Survey (> 50 hours; 2020–2021)
PI (Co-Is: M. Geha, E. Tollerud)
MMT Observatory and Anglo-Australian Telescope: The SAGA Survey (> 300 hours; 2013–2021)
Co-I (PIs: M. Geha, B. Weiner, N. Kallivayalil)
Blanco Telescope: DECam Dwarf Galaxy Survey (2019–2021)
Co-I (PI: A. Drlica-Wagner)
Blanco Telescope: Magellanic Satellites Survey (2016–2019)
Co-I (PI: K. Bechtol)

TEACHING

University of Utah
Instructor, Statistical and Computational Methods (grad course), Spring 2024
Instructor, Introduction to Cosmology (undergrad upper-level), Fall 2022 & Fall 2023
Rutgers University
Mentor, Byrne First-Year Seminar, Fall 2020
Remote Guest Lecturer, Research Methods in Astrophysics (undergrad upper-level), Yale, Fall 2020
University of Pittsburgh
Organizer, Data Science Workshop, Fall 2018
Teacher, LSST DESC Dark Energy School VIII, Spring 2018
Guest Lecturer, Galactic & Extragalactic Astronomy (grad course), Spring 2018
Guest Lecturer, Basics of Space Flight (undergrad lower-level), Spring 2017
Guest Lecturer, Solar System and Exoplanets (undergrad lower-level), Spring 2017
Teacher, Intermediate Python Tutorials, Spring 2017
Stanford University
Organizer & Lecturer, KIPAC Computing Boot Camp, Fall 2015
Guest Lecturer, Practical Computing for Scientists (undergrad lower-level), Spring 2014 & Spring 2015
Head Teaching Assistant & Guest Lecturer, Electricity and Optics (undergrad lower-level), Winter 2013
Teaching Assistant, Computational Physics (undergrad upper-level), Fall 2012
Teaching Assistant, Electricity and Optics (undergrad lower-level), Winter 2011

COMMUNITY ENGAGEMENT

2024 Invited Speaker, St. George Astronomy Group, Mar 2024

- 2023 Invited Speaker, Salt Lake Oasis, Oct 2023
 Interviewee, LGBTQIA+ in Astronomy, IAU Office for Astronomy Outreach, Oct 2023
 Invited Speaker, First Friday Astronomy, Boise State Physics, Oct 2023
 Invited Panelist, KIPAC Public Lecture: “The next decade of discovery with the Vera C. Rubin Observatory”, Sep 2023
- 2022 Invited Guest, The Astro Show, Wyoming Stargazing, Dec 2022
 Interviewee, Queer Experiences in Astronomy, JustSpace Alliance, Jun 2022
 Panelist, Out in Astronomy, American Astronomy Society (AAS) and U of Utah, Mar 2022
- 2021 Invited Speaker, First Friday Astronomy, Boise State Physics, Oct 2021
 Invited Speaker, New Jersey Astronomical Association General Meeting, May 2021
 Invited Speaker, Friends of Rutgers Astronomy Event, Jan 2021
- 2018 Invited Speaker, Astronomy on Tap Edinburgh, Fall 2018
- 2017 Speaker, Astronomy on Tap Pittsburgh, Fall 2017
 Invited Speaker, Allegheny Observatory Public Lecture, Spring 2017
- 2015 Volunteer, KIPAC Open House, 2013–2015
- 2014 Teacher, Stanford ESP Splash! Program, 2010–2014

DEPARTMENTAL SERVICE

University of Utah

- Co-Chair, LGBTQ+ Affairs Committee, 2023–present
- Co-Chair, Public Presentations (Colloquia & Seminars) Committee, 2023–present
- Chair, Science Research Initiative Liaison, 2023–present
- Member, PANDA Undergraduate Mentoring Program Committee, 2022–present
- Chair, Astronomy Task Force, 2022–2023
- Member, HEAP Seminar Committee, 2022–2023

University of Pittsburgh

- Co-Organizer, Philosophy of Cosmology Seminar, 2018–2019
- Co-Organizer, Astro Lunch Seminar, 2017–2019

Kavli Institute for Particle Astrophysics and Cosmology, Stanford University

- Member, Intellectual Life Committee, 2015–2016

PROFESSIONAL SERVICE

(years/dates omitted to maintain anonymity)

- Panelist, Hubble Space Telescope Time Allocation Committee
- Panelist, National Science Foundation, Astronomy and Astrophysics Research Grants
- Panelist, National Science Foundation, CAREER
- Reviewer, NASA FINESST Program
- Reviewer, UK Science and Technology Funding Council
- Executive Secretary, NASA Astrophysics Theory Program Panel Review
- Referee, The Astrophysical Journal
- Referee, The Journal of Cosmology and Astroparticle Physics

Referee, Monthly Notices of the Royal Astronomical Society

COMMUNITY SERVICE

Maintainer, The Astronomy and Astrophysics Outlist, 2018–present

INVITED COLLOQUIA, SEMINARS, AND NOTABLE TALKS

- 2023 Colloquium, Carnegie Observatories, Oct 31
Physics Colloquium, Boise State University, Oct 6
Theoretical astrophysics colloquium, U Arizona, Sep 25
Invited Speaker, Palomar Science Meeting 2023, Caltech, Jun 1
Utah Data Science Seminar, U of Utah, Apr 5
Colloquium, Institute of Astronomy and Astrophysics, Academia Sinica (ASIAA), Taiwan, Feb 22
Colloquium, Department of Physics, National Taiwan University, Feb 21
IAU Symposium 377: Early Disk-Galaxy Formation from JWST to the Milky Way, Kuala Lumpur, Malaysia, Feb 6 (invited speaker)
- 2022 Astronomy Colloquium & Conversations in Equity and Inclusion, U Michigan, Apr 14–15
CosmoPalooza (virtual; originally a special session at the canceled AAS 239), Jan 13
- 2021 DELVE Collaboration Meeting (virtual; plenary talk), Oct 20
Informal Seminar, Institute for Advanced Study, Sep 9
Astrophysics Seminar, Rutgers (virtual), Aug 31
Special Colloquium, CMU (virtual), Mar 17
Special Seminar, Center for Computational Astrophysics, Flatiron Institute (virtual), Mar 9
High Energy and Astrophysics Seminar, University of Utah (virtual), Mar 4
Cooper Virtual Presentation, Cooper Union (virtual), Mar 1
- 2020 Pizza Lunch, Columbia University (virtual), Dec 8
Durham Friday Lunchtime Astrophysics Talks (FLAT), Durham University (virtual), Oct 30
Cosmology-Galaxy-IGM (CGI) Seminar, University of California, Santa Cruz (virtual), Sep 14
Cosmology Lunch Talk, Princeton (virtual), Mar 9
High Energy/Cosmology Theory Seminar, U Wisconsin, Madison, WI, Feb 18
Astro Lunch Seminar, NASA Jet Propulsion Laboratory, CA, Feb 3
Lunch Talk, Carnegie Observatories, CA, Jan 31
Astronomy Colloquium, National Tsing Hua University, Taiwan, Jan 17
- 2019 Astronomy/Cosmology Seminar, Stony Brook University, NY, Oct 7
Astrophysics Seminar, Rutgers, NJ, Sep 17
STATistical Methods for the Physical Sciences (STAMPS) Seminar, CMU, Apr 5
Physics Colloquium, Duke University, NC, Feb 11
Physics Colloquium, University of Pittsburgh, PA, Jan 14
- 2018 Fermilab Astrophysics Seminar, Fermilab, Oct 15
LSST DESC Collaboration Meeting (plenary talk), CMU, Jul 24–27
KICP Friday Seminar, U Chicago, Jan 26

- 2017 LSST DESC Seminar, Nov 17
 CCAPP Seminar, OSU, Oct 24
 LSST DESC Collaboration Meeting (plenary talk), Stony Brook U., Jul 11–14
 Quantifying and Understanding the Galaxy–Halo Connection, KITP, May 15–19
- 2016 Statistical Challenges in Modern Astronomy VI (plenary talk), CMU, Jun 6–10
- 2013 SCIPP Seminar, University of California, Santa Cruz, Jun 11

CONFERENCES, WORKSHOPS, INFORMAL TALKS

(*invited presentations; °contributed presentations; †poster presentations; °organizers)

- 2023 KIPAC@20, SLAC, Sep 12–15
 Rubin Project and Community Workshop (PCW), Tucson, AZ, Aug 7–11
 Rubin LSST DESC Collaboration Meeting, SLAC, Jul 24–28
 °Wide-Field Spectroscopy vs. Galaxy Formation Theory Workshop, U of Arizona, Mar 28–31
- 2022 °DESI-II Workshop, Asilomar, May 22–25
 *SDSS-V Milky Way as a Galaxy (MWAG) Working Group Telecon, May 18
 From Data to Software to Science with the Rubin Observatory LSST, Flatiron Institute, Mar 28–30
 LSST DESC Collaboration Meeting (virtual), Feb 21–25
- 2021 °Equity and Inclusion Journal Club, Rutgers (virtual), Dec 9
 *LSST DESC Sprint Week (virtual), Oct 26
 °NASA Hubble Fellowship Program Symposium (virtual), Oct 25–29
 Rubin Observatory Project & Community Workshop (virtual), Aug 9–13
 LSST DESC Collaboration Meeting (virtual), Jul 19–23
 †Multi-object Spectroscopy for Statistical Measures of Galaxy Evolution, STScI (virtual), May 17–20
 AURA Annual Meeting (virtual; participated as a Future Leader), Apr 12–14
 °A Rainbow of Dark Sectors, Aspen Center of Physics (virtual), Mar 30
 °LSST DESC Collaboration Meeting (virtual), Feb 1–5
- 2020 LSST DESC Sprint Week (virtual), Nov 30–Dec 4
 Snowmass Community Planning Meeting (virtual), Oct 5–8
 °NASA Hubble Fellowship Program Symposium (virtual), Sep 21–25
 STScI Symposium: The Local Group: Assembly and Evolution (virtual), Aug 31–Sep 4
 °Rubin Observatory Project & Community Workshop (virtual), Aug 10–14
 °KITP Online Reunion Conference: The Galaxy-Halo Connection Across Cosmic Time: Recent Updates, Aug 6–7
 °LSST DESC Collaboration Meeting (virtual), Jul 20–23
 KIPAC Virtual Workshop: Precision Measurements and Modeling of Lensing plus Clustering, Jul 9
 Rubin LSST Algorithm Workshop, Princeton (virtual), Mar 17–19
 LSST DESC Collaboration Meeting, U of Arizona, Jan 20–24
- 2019 °NASA Hubble Fellowship Program Symposium, Washington DC, Oct 21–24
 Inclusive Astronomy 2, STScI, Baltimore, MD, Oct 14–15

- ◊ LSST Dark Matter Workshop, KICP, Aug 5–7
- LSST DESC Collaboration Meeting, Berkeley, Jul 15–19
- MIAPP Workshop: Dynamics of Large-Scale Structure Formation, Jul 1–12
- ◊ LSST DESC Collaboration Meeting, Berkeley, Feb 25–Mar 1
- 2018 ◊ Probing the Nature of Dark Matter with LSST, LLNL, Oct 29–31
- ◊ LSST DESC Sprint Week, Royal Observatory of Edinburgh, Oct 22–26
- Aspen Center for Physics, Jun 11–29
- ◊ DESI Collaboration Meeting, Tucson, AZ, May 23–25
- *Mock Durham Workshop: Galaxy Formation for Surveys, Durham U., Apr 16–20
- ◊ PITT PACC Workshop: Probing the Nature of Dark Matter with LSST, Mar 5–7
- ◊ KIPAC Tea Talk, KIPAC/Stanford, Jan 16
- *BCCP Workshop: Modeling the Extragalactic Sky, Berkeley, Jan 10–12
- 2017 ◊ LSST DESC Sprint Week, ANL, Dec 4–8
- ◊ Super-PAC: Early Career Workshop in Philosophy of Astrophysics and Cosmology, U of Pittsburgh, Oct 27–29
- ◊ Astrostatistics Meeting, CMU, Sep 15
- ◊ DESI Collaboration Meeting, LBNL, Jun 19–23
- ◊ LSST DESC Hack Week, Fermilab, Apr 3–7
- ◊ LSST DESC Collaboration Meeting, SLAC, Feb 14–17
- 2016 DESI Collaboration Workshop, OSU, Dec 7–9
- ◊ LSST DESC Hack Week, CMU, Nov 7–11
- ◊ Astrostatistics Meeting, CMU, Sep 16
- ◊ DES Collaboration Meeting, SLAC, May 9–13
- ◊ Special Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Mar 24
- ◊ SnowPAC 2016: The Galaxy–Halo Connection, Mar 13–18
- ◊ LSST DESC Collaboration Meeting, SLAC, Mar 8–11
- ◊ KIPAC Tea Talk, Feb 9
- ◊ Essential Cosmology for the Next Generation 2016, Jan 10–16
- 2015 ◊ Large Scale Seminar, The Institute for Theory and Computation, Harvard–Smithsonian Center for Astrophysics, Nov 17
- ◊ Brown Bag Lunch, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology, Nov 16
- ◊ Galaxy Lunch, Yale University, Oct 28
- ◊ Informal Astro Seminar, New York University, Oct 23
- ◊ Astronomy Seminar, Columbia University, Oct 22
- ◊ Cosmology Seminar, University of California, Berkeley, Oct 13
- †(re)Solving Galaxies in the Era of Extremely Large Telescopes, GMT Community Science Meeting, Pacific Grove, CA, Oct 1–3
- ◊ Santa Cruz Galaxy Workshop, University of California, Santa Cruz, Aug 20
- † Local Group Astrostatistics, MIRA, University of Michigan, Ann Arbor, Jun 1–4

- *Mitchell Workshop, Texas A&M University, May 21
- °The Life and Death of Satellite Galaxies Workshop, Lorentz Center, Apr 30
- 2014 °CCAPP Workshop, Ohio State University, Nov 25
- †Potsdam Thinkshop: Satellite galaxies and dwarfs in the local group, Leibniz-Institut für Astrophysik Potsdam, Aug 25–29
- 2013 °Lunch Talk, Academia Sinica Institute of Astronomy and Astrophysics, Dec 2
- °KIPAC@10, Sep 4
- Santa Cruz Galaxy Workshop, University of California, Santa Cruz, Aug 12–16
- °Sussing Merger Trees, West Sussex, UK, Jul 8–13
- °Hunting for Dark Matter, Kavli Institute for Theoretical Physics, May 13–Jun 7
- Closing in on Dark Matter, Aspen Center for Physics, Jan 28–Feb 3
- Jerusalem Winter School in Theoretical Physics: Early Galaxy Formation in LCDM Cosmology, Israel Institute for Advanced Studies, Dec 31–Jan 10
- 2012 Sackler Colloquia: Dark Matter Universe: On the Threshold of Discovery, Irvine, CA, Oct 18–20
- Santa Cruz Galaxy Workshop, University of California, Santa Cruz, Aug 13–17
- International Summer School on AstroComputing: AstroInformatics, University of California High-Performance AstroComputing Center, Jul 9–20
- °KIPAC Tea Talk, Mar 20

MEDIA COVERAGE

- 2023 [astrobites](#)
featuring our discovery of a nearby ultra-faint dwarf galaxy, Pegasus W
- 2022 “An Unusual Home,” [Sky & Telescope](#), April 2022
featuring our work on the Satellites Around Galactic Analogs (SAGA) Survey
- 2021 [astrobites](#)
mentioning the Astronomy and Astrophysics Outlist that I maintain
- 2020 [astrobites](#)
featuring our work on how substructures impact dark matter halo density profiles
[SLAC News](#), [phys.org](#) *etc.*
featuring our work on Milky Way’s satellites and their connection to dark matter
- 2017 [Yale News](#) *etc.*
featuring our work on the Satellites Around Galactic Analogs (SAGA) Survey
- 2016 [AAS NOVA](#)
featuring our analysis of the destroyed satellites using the zoom-in simulations of Milky Way-size halos
[Stanford News](#), [APOD](#) *etc.*
mentioning the discovery of a dark substructure with ALMA strong lensing
- 2015 [Fermilab](#), [SLAC Today](#) *etc.*
mentioning the new dwarf galaxy candidates discovered by the Dark Energy Survey
- 2013 [SLAC Today](#), [NewScientist](#), *etc.*
mentioning our work on the velocity distribution of dark matter in the Milky Way
- 2012 [Symmetry Magazine](#)

mentioning our work on the “Rhapsody” zoom-in simulations of cluster-size halos

PROGRAMMING SKILLS

Python (incl. NumPy, SciPy, Matplotlib, Pandas, astropy, IPython, Jupyter); web development (incl. HTML, CSS, JavaScript, PHP); database (incl. SQL).

Please find a full list of software tools that I developed at yymao.github.io/tools

LIST OF PUBLICATIONS

*74 refereed journal papers, 2 submitted preprints, 11 selected white papers/research notes (marked with *)*

- [87] D. Buch, E. O. Nadler, R. H. Wechsler, Y.-Y. Mao, “Milky Way-est: Cosmological Zoom-in Simulations with Large Magellanic Cloud and Gaia-Sausage-Enceladus Analogs,” [arXiv:2404.08043](#) [ADS]
- [86] J. Thornton, A. Amon, R. H. Wechsler, S. Adhikari, Y.-Y. Mao *et al.*, “The mass profiles of dwarf galaxies from Dark Energy Survey lensing,” [arXiv:2311.14659](#) [ADS]
- 2024 [85] E. O. Nadler, V. Gluscevic, T. Driskell *et al.*, “Forecasts for Galaxy Formation and Dark Matter Constraints from Dwarf Galaxy Surveys,” *ApJ* (in press), [arXiv:2401.10318](#) [ADS]
- [84] K. B. W. McQuinn, Y.-Y. Mao, R. E. Cohen *et al.*, “Discovery and Characterization of Two Ultra Faint-Dwarfs Outside the Halo of the Milky Way: Leo M and Leo K,” *ApJ* (in press), [arXiv:2307.08738](#) [ADS]
- [83] E. Kado-Fong, M. Geha, Y.-Y. Mao *et al.*, “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,” *ApJ* (in press), [arXiv:2401.16469](#) [ADS]
- 2023 [82] L. Mezini, C. E. Fielder, A. R. Zentner, Y.-Y. Mao *et al.*, “The influence of subhaloes on host halo properties,” *MNRAS*, **526**, 4157 (2023) [[arXiv](#)][ADS]
- [81] E. Darragh-Ford, J. F. Wu, Y.-Y. Mao *et al.*, “Target Selection and Sample Characterization for the DESI LOW-Z Secondary Target Program,” *ApJ*, **954**, 149 (2023) [[arXiv](#)][ADS]
- [80] M. A. Troxel, C. Lin, A. Park *et al.* (LSST Dark Energy Science Collaboration), “A joint Roman Space Telescope and Rubin Observatory synthetic wide-field imaging survey,” *MNRAS*, **522**, 2801 (2023) [[arXiv](#)][ADS]
- [79] Z. Zhai, J. L. Tinker, A. Banerjee *et al.*, “The Aemulus Project. V. Cosmological Constraint from Small-scale Clustering of BOSS Galaxies,” *ApJ*, **948**, 99 (2023) [[arXiv](#)][ADS]
- [78] J. Prat, J. Zuntz, C. Chang *et al.* (LSST Dark Energy Science Collaboration), “The catalog-to-cosmology framework for weak lensing and galaxy clustering for LSST,” *The Open Journal of Astrophysics*, **6**, 13 (2023) [[arXiv](#)][ADS]
- [77] E. O. Nadler, P. Mansfield, Y. Wang *et al.*, “Symphony: Cosmological Zoom-in Simulation Suites over Four Decades of Host Halo Mass,” *ApJ*, **945**, 159 (2023) [[arXiv](#)][ADS]
- [76] K. B. W. McQuinn, Y.-Y. Mao, M. R. Buckley *et al.*, “Pegasus W: An Ultrafaint Dwarf Galaxy Outside the Halo of M31 Not Quenched by Reionization,” *ApJ*, **944**, 14 (2023) [[arXiv](#)][ADS]
- 2022 [75] K. Wang, Y.-Y. Mao, A. R. Zentner *et al.*, “Evidence of galaxy assembly bias in SDSS DR7 galaxy samples from count statistics,” *MNRAS*, **516**, 4003 (2022) [[arXiv](#)][ADS]
- [74] B. Dey, B. H. Andrews, J. A. Newman, Y.-Y. Mao *et al.*, “Photometric redshifts from SDSS images with an interpretable deep capsule network,” *MNRAS*, **515**, 5285 (2022) [[arXiv](#)][ADS]

- [73] *A. Drlica-Wagner, C. Prescod-Weinstein, H.-B. Yu *et al.*, “Report of the Topical Group on Cosmic Probes of Dark Matter for Snowmass 2021,” [arXiv:2209.08215](#) [ADS]
- [72] *K. Breivik, A. J. Connolly, K. E. S. Ford *et al.*, “From Data to Software to Science with the Rubin Observatory LSST,” [arXiv:2208.02781](#) [ADS]
- [71] S. Mau, E. O. Nadler, R. H. Wechsler *et al.* (DES Collaboration), “Milky Way Satellite Census. IV. Constraints on Decaying Dark Matter from Observations of Milky Way Satellite Galaxies,” *ApJ*, **932**, 128 (2022) [[arXiv](#)][ADS]
- [70] *L. Mezini, K. Wang, Y.-Y. Mao, A. R. Zentner, “Using Maximum Circular Velocity in Halo Occupation Distribution Models to Predict Galaxy Clustering,” *Research Notes of the American Astronomical Society*, **6**, 80 (2022) [ADS]
- [69] *M. Valluri, S. Chabanier, V. Irsic *et al.*, “Snowmass2021 Cosmic Frontier White Paper: Prospects for obtaining Dark Matter Constraints with DESI,” [arXiv:2203.07491](#) [ADS]
- [68] *K. Bechtol, S. Birrer, F.-Y. Cyr-Racine *et al.*, “Snowmass2021 Cosmic Frontier White Paper: Dark Matter Physics from Halo Measurements,” [arXiv:2203.07354](#) [ADS]
- [67] *Y.-Y. Mao, A. H. G. Peter, S. Adhikari *et al.*, “Snowmass2021: Vera C. Rubin Observatory as a Flagship Dark Matter Experiment,” [arXiv:2203.07252](#) [ADS]
- [66] *A. Banerjee, K. K. Boddy, F.-Y. Cyr-Racine *et al.*, “Snowmass2021 Cosmic Frontier White Paper: Cosmological Simulations for Dark Matter Physics,” [arXiv:2203.07049](#) [ADS]
- [65] J. F. Wu, J. E. G. Peek, E. J. Tollerud, Y.-Y. Mao *et al.*, “Extending the SAGA Survey (xSAGA). I. Satellite Radial Profiles as a Function of Host-galaxy Properties,” *ApJ*, **927**, 121 (2022) [[arXiv](#)][ADS]
- [64] M. M. Rau, C. B. Morrison, S. J. Schmidt *et al.* (LSST Dark Energy Science Collaboration), “A composite likelihood approach for inference under photometric redshift uncertainty,” *MNRAS*, **509**, 4886 (2022) [[arXiv](#)][ADS]
- [63] E. Kovacs, Y.-Y. Mao, M. Aguena *et al.* (LSST Dark Energy Science Collaboration), “Validating Synthetic Galaxy Catalogs for Dark Energy Science in the LSST Era,” *The Open Journal of Astrophysics*, **5**, 1 (2022) [[arXiv](#)][ADS]
- 2021 [62] J. Zuntz, F. Lanusse, A. I. Malz *et al.* (LSST Dark Energy Science Collaboration), “The LSST-DESC 3x2pt Tomography Optimization Challenge,” *The Open Journal of Astrophysics*, **4**, 13 (2021) [[arXiv](#)][ADS]
- [61] E. O. Nadler, A. Banerjee, S. Adhikari, Y.-Y. Mao, 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,” *ApJL*, **920**, L11 (2021) [[arXiv](#)][ADS]
- [60] A. Drlica-Wagner, J. L. Carlin, D. L. Nidever *et al.*, “The DECam Local Volume Exploration Survey: Overview and First Data Release,” *ApJS*, **256**, 2 (2021) [[arXiv](#)][ADS]
- [59] J. L. Tinker, J. Cao, M. Alpaslan, J. DeRose, Y.-Y. Mao *et al.*, “Probing the galaxy-halo connection with total satellite luminosity,” *MNRAS*, **505**, 5370 (2021) [[arXiv](#)][ADS]
- [58] Y. Wang, E. O. Nadler, Y.-Y. Mao *et al.*, “UniverseMachine: Predicting Galaxy Star Formation over Seven Decades of Halo Mass with Zoom-in Simulations,” *ApJ*, **915**, 116 (2021) [[arXiv](#)][ADS]
- [57] E. O. Nadler, A. Drlica-Wagner, K. Bechtol *et al.* (DES Collaboration), “Constraints on Dark Matter Properties from Observations of Milky Way Satellite Galaxies,” *PRL*, **126**, 091101 (2021) [[arXiv](#)][ADS]
- [56] R. Zhou, J. A. Newman, Y.-Y. Mao *et al.*, “The clustering of DESI-like luminous red galaxies

- using photometric redshifts,” *MNRAS*, 501, 3309 (2021) [arXiv][ADS]
- [55] LSST Dark Energy Science Collaboration (LSST DESC), “The LSST DESC DC2 Simulated Sky Survey,” *ApJS*, 253, 31 (2021) [arXiv][ADS]
- [54] Y.-Y. Mao, M. Geha, R. H. Wechsler *et al.*, “The SAGA Survey. II. Building a Statistical Sample of Satellite Systems around Milky Way-like Galaxies,” *ApJ*, 907, 85 (2021) [arXiv][ADS]
- [53] *LSST Dark Energy Science Collaboration, “DESC DC2 Data Release Note,” arXiv:2101.04855 [ADS]
- 2020 [52] C. E. Fielder, Y.-Y. Mao, A. R. Zentner *et al.*, “Illuminating dark matter halo density profiles without subhaloes,” *MNRAS*, 499, 2426 (2020) [arXiv][ADS]
- [51] J.-z. Cao, J. L. Tinker, Y.-Y. Mao, R. H. Wechsler, “Constraining the scatter in the galaxy-halo connection at Milky Way masses,” *MNRAS*, 498, 5080 (2020) [arXiv][ADS]
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