

Yao-Yuan Mao

Curriculum Vitae

Department of Physics and Astronomy
University of Utah
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RESEARCH AREAS

Topics: Dwarf galaxies. Galaxy formation and evolution. Dark matter and cosmology.

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 60+ 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 8](#).

ADVISEES

University of Utah

Currently working with two graduate and two undergraduate students

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
Leadership, 2019–present

Vera C. Rubin Observatory
Data Preview 0.1 and 0.2 Delegate, 2021–present
US/Chile Community Commissioning Effort Program Team Member, 2022–present

Rubin LSST Dark Energy Science Collaboration (LSST DESC), 2015–present
Dark Matter Working Group Co-convener, 2019–present
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

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 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. Wechsler)

OBSERVING PROPOSALS

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, Introduction to Cosmology (undergrad upper-level), Fall 2022

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

2022 Invited Speaker, The Astro Show, Wyoming Stargazing, Dec 2022

Panelist, Out in Astronomy (hosted by 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
 Chair, Astronomy Task Force, 2022–2023
 Member, HEAP Seminar Committee, 2022–2023
 Member, PANDA Undergraduate Mentioning Program 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
 Reviewer, NASA FINESST Program
 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 Theoretical astrophysics colloquium, U Arizona (scheduled for March 2023)
 IAU Symposium 377 @ Kuala Lumpur, Malaysia (invited speaker; scheduled for February 2023)
 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)

- 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 Λ CDM 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

- 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 & [SciPy Stack](#); C/C++; web development (HTML, CSS, JavaScript, PHP); SQL.
Please find a full list of software tools that I developed at yymao.github.io/tools

LIST OF PUBLICATIONS

*64 refereed journal papers, 3 submitted preprints, 8 selected white papers/research notes (marked with *)*

- [75] 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,” [arXiv:2209.06829](#) [ADS]
- [74] E. O. Nadler, P. Mansfield, Y. Wang *et al.*, “Symphony: Cosmological Zoom-in Simulation Suites over Four Decades of Host Halo Mass,” [arXiv:2209.02675](#) [ADS]
- [73] Z. Zhai, J. L. Tinker, A. Banerjee *et al.*, “The Aemulus Project V: Cosmological constraint from small-scale clustering of BOSS galaxies,” [arXiv:2203.08999](#) [ADS]
- 2022 [72] 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]
- [71] 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]
- [70] *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]
- [69] *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]
- [68] S. Mau, E. O. Nadler, R. H. Wechsler *et al.*, “Milky Way Satellite Census. IV. Constraints on Decaying Dark Matter from Observations of Milky Way Satellite Galaxies,” *ApJ*, **932**, 128 (2022) [[arXiv](#)][ADS]
- [67] *L. Mezzini, 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]
- [66] *[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]

- [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](#)]
- [50] K. Wang, Y.-Y. Mao, A. R. Zentner *et al.*, “Concentrations of dark haloes emerge from their merger histories,” *MNRAS*, **498**, 4450 (2020) [[arXiv](#)][[ADS](#)]
- [49] E. O. Nadler, A. Banerjee, S. Adhikari, Y.-Y. Mao, R. H. Wechsler, “Signatures of Velocity-dependent Dark Matter Self-interactions in Milky Way-mass Halos,” *ApJ*, **896**, 112 (2020) [[arXiv](#)][[ADS](#)]
- [48] E. O. Nadler, R. H. Wechsler, K. Bechtol, Y.-Y. Mao *et al.* (DES Collaboration), “Milky Way Satellite Census. II. Galaxy-Halo Connection Constraints Including the Impact of the Large

- Magellanic Cloud,” *ApJ*, **893**, 48 (2020) [arXiv][ADS]
- [47] S. Mau, W. Cerny, A. B. Pace *et al.*, “Two Ultra-faint Milky Way Stellar Systems Discovered in Early Data from the DECam Local Volume Exploration Survey,” *ApJ*, **890**, 136 (2020) [arXiv][ADS]
- 2019 [46] T. S. Li, S. E. Kposov, D. B. Zucker *et al.* (S5 Collaboration), “The southern stellar stream spectroscopic survey (S⁵): Overview, target selection, data reduction, validation, and early science,” *MNRAS*, **490**, 3508 (2019) [arXiv][ADS]
- [45] D. Korytov, A. Hearin, E. Kovacs *et al.* (LSST Dark Energy Science Collaboration), “CosmoDC2: A Synthetic Sky Catalog for Dark Energy Science with LSST,” *ApJS*, **245**, 26 (2019) [arXiv][ADS]
- [44] K. Wang, Y.-Y. Mao, A. R. Zentner *et al.*, “How to optimally constrain galaxy assembly bias: supplement projected correlation functions with count-in-cells statistics,” *MNRAS*, **488**, 3541 (2019) [arXiv][ADS]
- [43] C. E. Fielder, Y.-Y. Mao, J. A. Newman, A. R. Zentner, T. C. Licquia, “Predictably missing satellites: subhalo abundances in Milky Way-like haloes,” *MNRAS*, **486**, 4545 (2019) [arXiv][ADS]
- [42] *MSE Science Team, “The Detailed Science Case for the Maunakea Spectroscopic Explorer, 2019 edition,” arXiv:1904.04907 [ADS]
- [41] J. DeRose, R. H. Wechsler, J. L. Tinker, M. R. Becker, Y.-Y. Mao *et al.*, “The AEMULUS Project. I. Numerical Simulations for Precision Cosmology,” *ApJ*, **875**, 69 (2019) [arXiv][ADS]
- [40] Z. Zhai, J. L. Tinker, M. R. Becker, J. DeRose, Y.-Y. Mao *et al.*, “The Aemulus Project. III. Emulation of the Galaxy Correlation Function,” *ApJ*, **874**, 95 (2019) [arXiv][ADS]
- [39] E. O. Nadler, Y.-Y. Mao, G. M. Green, R. H. Wechsler, “Modeling the Connection between Subhalos and Satellites in Milky Way-like Systems,” *ApJ*, **873**, 34 (2019) [arXiv][ADS]
- [38] *A. Drlica-Wagner, Y.-Y. Mao, S. Adhikari *et al.*, “Probing the Fundamental Nature of Dark Matter with the Large Synoptic Survey Telescope,” arXiv:1902.01055 [ADS]
- [37] T. McClintock, E. Rozo, M. R. Becker, J. DeRose, Y.-Y. Mao *et al.*, “The Aemulus Project. II. Emulating the Halo Mass Function,” *ApJ*, **872**, 53 (2019) [arXiv][ADS]
- 2018 [36] J. L. Tinker, C. Hahn, Y.-Y. Mao, A. R. Wetzel, “Halo histories versus galaxy properties at $z = 0$ - III. The properties of star-forming galaxies,” *MNRAS*, **478**, 4487 (2018) [arXiv][ADS]
- [35] J. L. Tinker, C. Hahn, Y.-Y. Mao, A. R. Wetzel, C. Conroy, “Halo histories versus galaxy properties at $z = 0$ II: large-scale galactic conformity,” *MNRAS*, **477**, 935 (2018) [arXiv][ADS]
- [34] D. Campbell, F. C. van den Bosch, N. Padmanabhan, Y.-Y. Mao *et al.*, “The galaxy clustering crisis in abundance matching,” *MNRAS*, **477**, 359 (2018) [arXiv][ADS]
- [33] E. O. Nadler, Y.-Y. Mao, R. H. Wechsler, S. Garrison-Kimmel, A. Wetzel, “Modeling the Impact of Baryons on Subhalo Populations with Machine Learning,” *ApJ*, **859**, 129 (2018) [arXiv][ADS]
- [32] Y.-Y. Mao, A. R. Zentner, R. H. Wechsler, “Beyond assembly bias: exploring secondary halo biases for cluster-size haloes,” *MNRAS*, **474**, 5143 (2018) [arXiv][ADS]
- [31] A. Tenneti, Y.-Y. Mao, R. A. C. Croft *et al.*, “The radial acceleration relation in disc galaxies in the MassiveBlack-II simulation,” *MNRAS*, **474**, 3125 (2018) [arXiv][ADS]
- [30] Y.-Y. Mao, E. Kovacs, K. Heitmann *et al.* (LSST Dark Energy Science Collaboration), “DESCQA: An Automated Validation Framework for Synthetic Sky Catalogs,” *ApJS*, **234**, 36 (2018) [arXiv][ADS]
- [29] J. U. Lange, F. C. van den Bosch, A. Hearin *et al.*, “Brightest galaxies as halo centre tracers in

- SDSS DR7,” *MNRAS*, 473, 2830 (2018) [arXiv][ADS]
- 2017 [28] J. L. Tinker, A. R. Wetzel, C. Conroy, Y.-Y. Mao, “Halo histories versus Galaxy properties at $z = 0$ - I. The quenching of star formation,” *MNRAS*, 472, 2504 (2017) [arXiv][ADS]
- [27] A. S. Villarreal, A. R. Zentner, Y.-Y. Mao *et al.*, “The inimitable nature of assembly bias: the impact of halo definition on assembly bias,” *MNRAS*, 472, 1088 (2017) [arXiv][ADS]
- [26] A. P. Hearin, D. Campbell, E. Tollerud *et al.*, “Forward Modeling of Large-scale Structure: An Open-source Approach with Halotools,” *AJ*, 154, 190 (2017) [arXiv][ADS]
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