

ANDREW WETZEL

ASSOCIATE PROFESSOR

DEPARTMENT OF PHYSICS & ASTRONOMY

UNIVERSITY OF CALIFORNIA, DAVIS

ONE SHIELDS AVENUE

DAVIS CA 95616

AWETZEL@UCDAVIS.EDU

RESEARCH INTERESTS

theoretical astrophysics and cosmology

computational methods of cosmological simulations

cosmological structure formation: halos, galaxies, stars

near-field cosmology: dark matter and its distribution in the local Universe

galactic archeology: formation history of the Milky Way and galaxies in the Local Group

APPOINTMENTS

Associate Professor	2021 -
Assistant Professor	2016 - 2021
Department of Physics & Astronomy, University of California, Davis	
Caltech - Carnegie Fellow	2013 - 2017
Moore Prize Scholar – TAPIR, California Institute of Technology	
Carnegie Fellow – The Observatories of the Carnegie Institution for Science	
Postdoctoral Research Associate – Department of Astronomy, Yale University	2010 - 2013
Graduate Researcher (NSF Fellow) – Department of Astronomy, UC Berkeley	2005 - 2010
Research Associate – Theoretical Astrophysics Group, Los Alamos National Laboratory	2005

EDUCATION

Ph.D. in Astrophysics – University of California, Berkeley	2010
M.A. in Astrophysics – University of California, Berkeley	2007
B.S. in Physics with Honors & High Distinction – Harvey Mudd College	2005

HONORS & AWARDS

Presidential Early Career Award for Scientists & Engineers (PECASE) – White House	2025
Graduate Program Advising and Mentoring Award – UC Davis	2022
NSF CAREER award – National Science Foundation	2021
Hellman Fellow – Society of Hellman Fellows	2019
Scialog Fellow – Research Corporation, Heising-Simons Foundation	2018, 2019
Kavli Frontiers of Science Fellow – National Academy of Sciences	2013
NSF Graduate Research Fellow – National Science Foundation	2007 - 2010
N.D. Delegate – National Youth Science Camp	2001

RESEARCH ADVISING

POSTDOCS (2)

Samantha Benincasa	2018 - 2020
Sarah Loebman (NASA Hubble Fellow, UC Davis Chancellor's Fellow)	2017 - 2020

GRADUATE STUDENTS (8)

Heather Pearson	2023 -
Megan Barry	2020 -
Fiona McCluskey (NASA FINESST awardee)	2019 -
Preet Patel	2020 - 2023
Pratik Gandhi (TACC Frontera Fellow)	2019 - 2024
Matt Bellardini	2018 - 2023
Isaiah Santistevan (NASA FINESST awardee)	2018 - 2023
Jenna Samuel	2018 - 2021

UNDERGRADUATE STUDENTS (10)

Rori Kang (Harvey Mudd College) – REU	2024
Jason Chen	2024
Alfredo Calderon (Cal Poly Humboldt) – Cal-Bridge summer	2023
Russell Graf – Senior Thesis	2022 - 2023
Rachel Perelgut – Senior Thesis	2022 - 2023
Heather Pearson (Oberlin College) – REU	2022
Bhavya Pardasani (U of Illinois) – REU	2021
Sierra Chapman – Senior Honors Thesis	2018 - 2019
Preet Patel (U of Michigan) – BlueWaters Student Internship	2018 - 2020
Kareem El-Badry (Yale University) – Caltech SURF	2015

CONFERENCE ORGANIZING

<i>Milky Way research: connecting the near and far field</i> – Paris, France	Oct 2023
<i>Bay Area Local Group Workshop</i> – Berkeley CA	Oct 2018
<i>Dynamics of the Milky Way System in the Era of Gaia</i> – Aspen CO	Aug 2018
<i>IUPAP Conference on Computational Physics</i> – Davis CA	July 2018
<i>The Life and Death of Satellite Galaxies</i> – Leiden, Netherlands	Apr 2015
<i>Pasadena Postdoc Retreat</i> – Lake Arrowhead CA	Apr 2015
<i>Mayacamas Meeting</i> – Calistoga CA	Apr 2014

PROFESSIONAL SERVICE

MENTOR FOR CAL-BRIDGE PROGRAM

	2020 -
Richard Truong (San Francisco State U)	2023 -
Pedro Jesus Quinonez (Sonoma State U)	2021 - 2023

TELESCOPE TIME ALLOCATION COMMITTEE

Hubble Space Telescope (external)	
University of California Observatories (2 semesters)	2019
Caltech Optical Observatories (2 semesters)	2015
Yale University (3 semesters)	2012 - 2013

GRANT REVIEW

Research Corporation for Science Advancement – Cottrell Scholar Award
 European Research Council – Consolidator Grants (external)
 NSF – Faculty Early Career Development Program (CAREER)
 NSF – Astronomy & Astrophysics Postdoctoral Fellowships (external)
 NSF – Astronomy & Astrophysics Research Grants
 NASA – Astrophysics Theory Program

JOURNAL REVIEW

Nature Astronomy, Physical Review Letters, Physical Review D, The Astrophysical Journal Letters, The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society

MUSIC

Carillonneur Member: Guild of Carillonneurs in North America 2010 -

DEPARTMENTAL COLLOQUIA & SEMINARS (LAST 4 YEARS)

UC Santa Cruz – Cosmology/Galaxies/IGM Seminar Feb 2025
 University of Pennsylvania – Astrophysics Seminar Apr 2024
 MIT, Kavli Institute – Astrophysics Colloquium Apr 2024
 California State University, Sacramento – Physics & Astronomy Colloquium Aug 2022
 Missouri University of Science & Technology – Physics Colloquium Mar 2022
 University of Waterloo – Astrophysics Seminar Feb 2022
 University of Texas, Austin – Astronomy Colloquium Mar 2021

CONFERENCE PRESENTATIONS (LAST 4 YEARS)

IAU Symposium 395: Stellar populations in the Milky Way & beyond – Paraty, Brazil Nov 2024
GalFRESCA – Pasadena CA Sep 2024
The Milky Way Assembly Tale – Bologna, Italy May 2024
American Physical Society - April Meeting – Sacramento CA Apr 2024
Milky Way research: connecting the near and far field – Paris, France Oct 2023
Wide-Field Spectroscopy versus Galaxy Formation Theory – Tucson AZ Mar 2023
Early Disk-Galaxy Formation – Kuala Lumpur, Malaysia Feb 2023
Linking the Galactic & Extragalactic – Wollongong, Australia Nov 2022
Disk Formation Workshop – Irvine CA Sep 2022
Santa Cruz Galaxy Workshop – Santa Cruz CA Aug 2022
From Stars to Galaxies II – Gothenberg, Sweden June 2022
Galactic Archeology with Fundamental Stellar Parameters – Aspen CO June 2021

GRANT FUNDING AWARDED (\$7.0 MILLION TOTAL, \$3.0 MILLION TO WETZEL)

PI (FI Fiona McCluskey)	2024
NASA – Future Investigators in NASA Earth, Space Science, Technology (FINESST) – \$100,000 <i>Deciphering Galactic Disk Formation: Galactic Archaeology in a Cosmological Context</i>	
PI: NSF – Faculty Early Career Development Program (CAREER) – \$800,117	2021
<i>Galactic Archeology: Understanding the Building Blocks of the Milky Way across Cosmic Time</i>	
PI (with Laura Sales)	2021
NSF – Astronomy & Astrophysics Research Grant – \$574,714 (\$273,175 to Wetzel) <i>Collaborative Research: Magellanic Dwarfs as a Key Laboratory for Dwarf Galaxy Formation</i>	
PI (FI Isaiah Santistevan)	2021
NASA – Future Investigators in NASA Earth, Space Science, Technology (FINESST) – \$90,000 <i>Modeling the Cosmological Evolution of Satellite Dwarf Galaxies in 6D Phase Space</i>	
co-I (PI Tony Sohn): NASA STScI – HST GO (Cycle 28) – \$367,209 (\$28,382 to Wetzel)	2020
<i>Andromeda & the Seven Dwarfs: M31 Mass, Satellite Orbits, & the Nature of the Satellite Plane</i>	
co-PI (PI Robyn Sanderson)	2019
NASA – Astrophysics Theory Program – \$498,022 (\$171,347 to Wetzel) <i>Predicting Observable Signatures for Dynamical Interactions between Dark-Matter...</i>	
PI: NASA STScI – HST Legacy Theory Program (Cycle 27) – \$415,402 (\$215,460 to Wetzel)	2019
<i>Probing the Epoch of Reionization with the Fossil Record of Nearby Dwarf Galaxies</i>	
co-PI (PI Dan Weisz)	2019
NASA STScI – HST Treasury Program (Cycle 27) – \$1.7 million (\$204,403 to Wetzel) <i>Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System</i>	
PI (with Keith Hawkins and Jennifer van Saders)	2019
Heising-Simons Foundation – \$165,000 (\$55,000 to Wetzel) <i>Aging Gracefully: Stellar Ages Across the HR Diagram & Implications for Galactic Archeology</i>	
PI: UC Davis Hellman Fellowship – \$18,000	2019
<i>Using Stars as Gravitational Antennae to Measure Dark Matter</i>	
PI: NASA – Astrophysics Theory Program – \$394,195	2017
<i>Modeling Galactic Archeology of the Milky Way</i>	
Admin PI: NASA STScI – Hubble Fellowship for Sarah Loebman – \$342,764	2017
<i>Mapping the Dark Matter in the Milky Way using Next-Generation Cosmological Simulations</i>	
PI: NASA STScI – HST Theory Program (Cycle 25) – \$115,600	2017
<i>Understanding the Physics of Gas Stripping and Star-Formation Quenching...</i>	
co-PI (PI Nitya Kallivayalil)	2016
NASA STScI – HST Treasury Program (Cycle 24) – \$725,754 (\$218,014 to Wetzel) <i>Milky Way Cosmology: Laying the Foundation for Full 6-D Dynamical Mapping...</i>	
co-I (PI James Bullock): NASA STScI – HST Theory Program (Cycle 24) – \$120,000	2016
<i>Accurate Predictions for Dark Matter Substructure</i>	
co-I (PI Daisuke Nagai): NSF – Astronomical Sciences – \$494,000	2014
<i>Modeling the Cosmic Melting Pots in the Outskirts of Galaxies and Galaxy Clusters</i>	
co-I (PI Andrew Benson): NASA STScI – HST Theory Program (Cycle 22) – \$120,000	2014
<i>Going out with a bang or a whimper? Star Formation and Quenching in the Local Group...</i>	

SUPERCOMPUTING AWARDED (933 MILLION CORE-HOURS, \$12.7 MILLION IN VALUE)

co-I (PI Phil Hopkins): NSF Frontera – 134.4 million core-hours <i>Simulating New Physics on Cosmological Scales: The Feedback In Realistic Environments Project</i>	2024
co-PI (PI Coral Wheeler): ACCESS Stampede-3 – 1.3 million core-hours <i>Simulating the Milky Way's Smallest Companions</i>	2024
co-PI (PI Sarah Loebman): XSEDE Stampede-2 – 3.4 million core-hours <i>Simulating Star Clusters & GMCs Across the Milky Way</i>	2022
PI (FI Isaiah Santistevan): NASA Pleiades – 4.9 million core-hours <i>Modeling the Cosmological Evolution of Satellite Dwarf Galaxies in 6D Phase Space</i>	2021
co-I (PI Phil Hopkins): NSF Frontera – 165.2 million core-hours <i>Simulating New Physics on Cosmological Scales: The Feedback In Realistic Environments Project</i>	2021
PI: NASA Pleiades – 16.5 million core-hours <i>Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System</i>	2021
PI: NASA Pleiades – 21.0 million core-hours <i>Probing the Epoch of Reionization with the Fossil Record of Nearby Dwarf Galaxies</i>	2021
co-I (PI Phil Hopkins): NSF Frontera – 100.8 million core-hours <i>Testing Fundamentally New Physics in Galaxies</i>	2021
PI: XSEDE Stampede-2 and Bridges-2 – 10.6 million core-hours <i>The Milky Way: A Billion Particles on FIRE</i>	2020
PI: XSEDE Stampede-2 – 1.7 million core-hours – <i>Simulating the Milky Way with the LMC</i>	2019
PI: NASA Pleiades – 31.2 million core-hours – <i>Modeling Galactic Archeology of the Milky Way</i>	2019
co-I (PI Phil Hopkins): NSF Frontera – 127.7 million core-hours <i>Probing New Physics in Galaxy Formation at Ultra-High Resolution</i>	2019
PI: NASA Pleiades – 14.3 million core-hours <i>Understanding the Physics of Gas Stripping & Star-Formation Quenching...</i>	2018
PI: XSEDE Stampede-2 – 5.6 million core-hours – <i>Simulating the Local Group</i>	2017
co-I (PI Joseph Smidt): LANL Grizzly – 30 million core-hours <i>Simulating the Dark Matter Distribution in the Local Group</i>	2017
co-I (PI Phil Hopkins): NCSA Blue Waters – 160 million core-hours <i>Probing New Physics in Galaxy Formation at Ultra-High Resolution</i>	2017
PI: NASA Pleiades – 16.4 million core-hours <i>Simulating the Proper Motions of Dwarf Galaxies around the Milky Way</i>	2016
co-I (PI Phil Hopkins): NASA Pleiades – 31.2 million core-hours <i>FIRE: Dark Matter & Galaxy Formation with Unprecedented Physics and Resolution</i>	2016
co-I (PI Shea Garrison-Kimmel): NASA Pleiades – 22 million core-hours <i>The Local Group: Galaxy Formation in the Nearby Universe</i>	2016
PI: XSEDE Stampede – 3.6 million core-hours – <i>Simulating the Local Group</i>	2016
PI: NASA Pleiades – 1.2 million core-hours – <i>Dwarf Galaxies of the Large Magellanic Cloud</i>	2015
co-I (PI Phil Hopkins): NASA Pleiades – 18 million core-hours <i>The Milky Way: Dark Matter & Galaxy Formation with Unprecedented Physics</i>	2014
co-PI (PI Phil Hopkins): XSEDE Stampede – 12 million core-hours <i>The Milky Way: A Billion Particles on FIRE</i>	2014

TELESCOPE OBSERVING AWARDED**(HST: 564 ORBITS, JWST: 29 HOURS, KECK: 13.5 NIGHTS, VLT: 317 HOURS)**

co-I (PI Roeland van der Marel): HST+JWST GO (Cycle 32) – 15 orbits + 2.4 hours <i>Enabling cross instrument proper motions with Draco dSph and NGC 2419</i>	2025
co-I (PI Jesse Van de Sande): VLT MUSE – 317 hours <i>GECKOS: Turning galaxy evolution on its side with deep observations of edge-on galaxies</i>	2022
co-I (PI Tony Sohn): HST GO (Cycle 28) – 48 orbits <i>Andromeda & the Seven Dwarfs: M31 Mass, Satellite Orbits, & the Nature of the Satellite Plane</i>	2020
co-I (PI Adam Smercina): HST GO (Cycle 28) – 31 orbits <i>A Benchmark Survey of Resolved Stellar Populations in the Nearest Ultra Diffuse Galaxy, F8D1</i>	2020
co-I (PI Yumi Choi): HST GO (Cycle 28) – 5 orbits <i>Near Field Cosmology with Ultra-faint Dwarfs: Patchy Reionization & Sub-Solar IMF</i>	2020
co-PI (PI Dan Weisz): HST Treasury Program (Cycle 27) – 244 orbits <i>Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System</i>	2019
co-I (PI Erik Tollerud): HST GO (Cycle 27) – 19 orbits <i>COS-SAGA: The Circumgalactic Medium of Nearby Milky Way Analogs & their Satellites</i>	2019
co-I (PI Alexie Leauthaud): Keck – 2 nights <i>Testing the Feedback-driven Breathing Mode in Dwarf Galaxies at $z \approx 0.1$</i>	2019
co-I (PI Tucker Jones): Keck – 7 nights <i>Dissecting Galaxy Formation & Testing Feedback Models on 100 pc Scales</i>	2017–2019
collaborator (PI Dan Weisz): JWST ERS (Cycle 1) – 27 hours <i>The Resolved Stellar Populations Early Release Science Program</i>	2017
co-I (PI Dan Weisz): Keck – 2.5 nights <i>Stellar Chemistry in Isolated Dwarf Galaxies</i>	2017
co-PI (PI Nitya Kallivayalil): HST Treasury Program (Cycle 24) – 164 orbits <i>Milky Way Cosmology: Laying the Foundation for Full 6-D Dynamical Mapping of the Nearby Universe</i>	2016
PI: Keck - 1 night <i>Constraining Star-Formation Quenching Mechanisms using Isolated Low-Mass Galaxies</i>	2015
co-I (PI Tony Sohn): HST GO (Cycle 23) – 14 orbits <i>The First Proper Motions of Ultra-faint Dwarf Galaxies</i>	2015
PI: Keck – 1 night <i>Testing Star-Formation Quenching using Isolated Dwarf Galaxies</i>	2014
co-I (PI Michael Balogh): Gemini South – 438 hours <i>GOGREEN Survey of Dense Galaxy Environments at $1 < z < 1.5$</i>	2014