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

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	2021 -
Preet Patel	2020 - 2023
Fiona McCluskey (NASA FINESST awardee)	2019 -
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

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

NSF Faculty Early Career Development Program (CAREER)
NSF Astronomy & Astrophysics Postdoctoral Fellowships (AAPF) (external)
NSF Astronomy & Astrophysics Research Grants (AAG)
NASA Astrophysics Theory Program (ATP)

JOURNAL REVIEW

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

MUSIC

Carillonneur Member: Guild of Carillonneurs in North America 2010 -

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
Deciphering Galactic Disk Formation: Galactic Archaeology in a Cosmological Context

PI: NSF – Faculty Early Career Development Program (CAREER) – $800,117 2021
Galactic Archeology: Understanding the Building Blocks of the Milky Way across Cosmic Time

PI (with Laura Sales) 2021
NSF - Astronomy & Astrophysics Research Grant – $574,714 ($273,175 to Wetzel)
Collaborative Research: Magellanic Dwarfs as a Key Laboratory for Dwarf Galaxy Formation

PI (FI Isaiah Santistevan) 2021
NASA – Future Investigators in NASA Earth, Space Science, Technology (FINESST) – $90,000
Modeling the Cosmological Evolution of Satellite Dwarf Galaxies in 6D Phase Space

co-I (PI Tony Sohn): NASA STScI – HST GO (Cycle 28) – $367,209 ($28,382 to Wetzel) 2020
Andromeda & the Seven Dwarfs: M31 Mass, Satellite Orbits, & the Nature of the Satellite Plane

co-PI (PI Robyn Sanderson) 2019
NASA – Astrophysics Theory Program – $498,022 ($171,347 to Wetzel)
Predicting Observable Signatures for Dynamical Interactions between Dark-Matter...

PI: NASA STScI – HST Legacy Theory Program (Cycle 27) – $415,402 ($215,460 to Wetzel) 2019
Probing the Epoch of Reionization with the Fossil Record of Nearby Dwarf Galaxies

co-PI (PI Dan Weisz) 2019
NASA STScI – HST Treasury Program (Cycle 27) – $1.7 million ($204,403 to Wetzel)
Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System

PI (with Keith Hawkins and Jennifer van Saders) 2019
Heising-Simons Foundation – $165,000 ($55,000 to Wetzel)
Aging Gracefully: Stellar Ages Across the HR Diagram & Implications for Galactic Archeology

PI: UC Davis Hellman Fellowship – $18,000 2019
Using Stars as Gravitational Antennae to Measure Dark Matter

PI: NASA – Astrophysics Theory Program – $394,195 2017
Modeling Galactic Archeology of the Milky Way

Admin PI: NASA STScI – Hubble Fellowship for Sarah Loebman – $342,764 2017
Mapping the Dark Matter in the Milky Way using Next-Generation Cosmological Simulations

PI: NASA STScI – HST Theory Program (Cycle 25) – $115,600 2017
Understanding the Physics of Gas Stripping and Star-Formation Quenching...

co-PI (PI Nitya Kallivayalil) 2016
NASA STScI – HST Treasury Program (Cycle 24) – $725,754 ($218,014 to Wetzel)
Milky Way Cosmology: Laying the Foundation for Full 6-D Dynamical Mapping...

co-I (PI James Bullock): NASA STScI – HST Theory Program (Cycle 24) – $120,000 2016
Accurate Predictions for Dark Matter Substructure

co-I (PI Daisuke Nagai): NSF – Astronomical Sciences – $494,000 2014
Modeling the Cosmic Melting Pots in the Outskirts of Galaxies and Galaxy Clusters

co-I (PI Andrew Benson): NASA STScI – HST Theory Program (Cycle 22) – $120,000 2014
Going out with a bang or a whimper? Star Formation and Quenching in the Local Group...

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

co-I (PI Phil Hopkins): NSF Frontera – 134.4 million core-hours 2024
Simulating New Physics on Cosmological Scales: The Feedback In Realistic Environments Project

co-PI (PI Coral Wheeler): ACCESS Stampede-3 – 1.3 million core-hours 2024
Simulating the Milky Way's Smallest Companions

co-PI (PI Sarah Loebman): XSEDE Stampede-2 – 3.4 million core-hours 2022
Simulating Star Clusters & GMCs Across the Milky Way

PI (FI Isaiah Santistevan): NASA Pleiades – 4.9 million core-hours 2021
Modeling the Cosmological Evolution of Satellite Dwarf Galaxies in 6D Phase Space

co-I (PI Phil Hopkins): NSF Frontera – 165.2 million core-hours 2021
Simulating New Physics on Cosmological Scales: The Feedback In Realistic Environments Project

PI: NASA Pleiades – 16.5 million core-hours 2021
Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System

PI: NASA Pleiades – 21.0 million core-hours 2021
Probing the Epoch of Reionization with the Fossil Record of Nearby Dwarf Galaxies

co-I (PI Phil Hopkins): NSF Frontera – 100.8 million core-hours 2021
Testing Fundamentally New Physics in Galaxies

PI: XSEDE Stampede-2 and Bridges-2 – 10.6 million core-hours 2020
The Milky Way: A Billion Particles on FIRE

PI: XSEDE Stampede-2 – 1.7 million core-hours – *Simulating the Milky Way with the LMC* 2019

PI: NASA Pleiades – 31.2 million core-hours – *Modeling Galactic Archeology of the Milky Way* 2019

co-I (PI Phil Hopkins): NSF Frontera – 127.7 million core-hours 2019
Probing New Physics in Galaxy Formation at Ultra-High Resolution

PI: NASA Pleiades – 14.3 million core-hours 2018
Understanding the Physics of Gas Stripping & Star-Formation Quenching...

PI: XSEDE Stampede-2 – 5.6 million core-hours – *Simulating the Local Group* 2017

co-I (PI Joseph Smidt): LANL Grizzly – 30 million core-hours 2017
Simulating the Dark Matter Distribution in the Local Group

co-I (PI Phil Hopkins): NCSA Blue Waters – 160 million core-hours 2017
Probing New Physics in Galaxy Formation at Ultra-High Resolution

PI: NASA Pleiades – 16.4 million core-hours 2016
Simulating the Proper Motions of Dwarf Galaxies around the Milky Way

co-I (PI Phil Hopkins): NASA Pleiades – 31.2 million core-hours 2016
FIRE: Dark Matter & Galaxy Formation with Unprecedented Physics and Resolution

co-I (PI Shea Garrison-Kimmel): NASA Pleiades – 22 million core-hours 2016
The Local Group: Galaxy Formation in the Nearby Universe

PI: XSEDE Stampede – 3.6 million core-hours – *Simulating the Local Group* 2016

PI: NASA Pleiades – 1.2 million core-hours – *Dwarf Galaxies of the Large Magellanic Cloud* 2015

co-I (PI Phil Hopkins): NASA Pleiades – 18 million core-hours 2014
The Milky Way: Dark Matter & Galaxy Formation with Unprecedented Physics

co-PI (PI Phil Hopkins): XSEDE Stampede – 12 million core-hours 2014
The Milky Way: A Billion Particles on FIRE

TELESCOPE OBSERVING AWARDED
(HST: 549 ORBITS, JWST: 27 HOURS, KECK: 13.5 NIGHTS, VLT: 317 HOURS)

co-I (PI Jesse Van de Sande): VLT MUSE – 317 hours 2022
GECKOS: Turning galaxy evolution on its side with deep observations of edge-on galaxies

co-I (PI Tony Sohn): HST GO (Cycle 28) – 48 orbits 2020
Andromeda & the Seven Dwarfs: M31 Mass, Satellite Orbits, & the Nature of the Satellite Plane

co-I (PI Adam Smercina): HST GO (Cycle 28) – 31 orbits 2020
A Benchmark Survey of Resolved Stellar Populations in the Nearest Ultra Diffuse Galaxy, F8D1

co-I (PI Yumi Choi): HST GO (Cycle 28) – 5 orbits 2020
Near Field Cosmology with Ultra-faint Dwarfs: Patchy Reionization & Sub-Solar IMF

co-PI (PI Dan Weisz): HST Treasury Program (Cycle 27) – 244 orbits 2019
Tracing the 6-D Orbital & Formation History of the Complete M31 Satellite System

co-I (PI Erik Tollerud): HST GO (Cycle 27) – 19 orbits 2019
COS-SAGA: The Circumgalactic Medium of Nearby Milky Way Analogs & their Satellites

co-I (PI Alexie Leauthaud): Keck – 2 nights 2019
Testing the Feedback-driven Breathing Mode in Dwarf Galaxies at $z \approx 0.1$

co-I (PI Tucker Jones): Keck – 7 nights 2017–2019
Dissecting Galaxy Formation & Testing Feedback Models on 100 pc Scales

collaborator (PI Dan Weisz): JWST ERS (Cycle 1) – 27 hours 2017
The Resolved Stellar Populations Early Release Science Program

co-I (PI Dan Weisz): Keck – 2.5 nights 2017
Stellar Chemistry in Isolated Dwarf Galaxies

co-PI (PI Nitya Kallivayalil): HST Treasury Program (Cycle 24) – 164 orbits 2016
Milky Way Cosmology: Laying the Foundation for Full 6-D Dynamical Mapping of the Nearby Universe

PI: Keck - 1 night 2015
Constraining Star-Formation Quenching Mechanisms using Isolated Low-Mass Galaxies

co-I (PI Tony Sohn): HST GO (Cycle 23) – 14 orbits 2015
The First Proper Motions of Ultra-faint Dwarf Galaxies

PI: Keck – 1 night 2014
Testing Star-Formation Quenching using Isolated Dwarf Galaxies

co-I (PI Michael Balogh): Gemini South – 438 hours 2014
GOGREEN Survey of Dense Galaxy Environments at $1 < z < 1.5$