# katherine emily whitaker

Birth Date: 3/27/1983


**Contact Information**

Department of Astronomy
University of Massachusetts
710 North Pleasant Street
Amherst, MA 01003 USA

*Office:* +1-413-545-3556
*Twitter:* astrowhit
*E-mail:* kwhitaker@astro.umass.edu
*Webpage:* astrowhit.com


**Research Interests**

**Observational galaxy formation and evolution:** quenching, galaxy morphology, star formation rate — stellar mass relation, spatially resolved stellar populations, spectroscopic ages, dust content, star formation efficiency.

**Education**

**Ph.D.** in Astronomy, Yale University (Awarded December 2012)
Thesis: *A Cosmic Metamorphosis: The Quenching of Star-formation in Massive Galaxies Over the Last Eleven Billion Years*
Advisor: Pieter G. van Dokkum

**M.S., M.Phil.** in Astronomy, Yale University (May 2007, 2008)

**B.S.** in Physics & Astronomy, Univ. of Massachusetts Amherst (May 2005)
*Summa cum Laude*, with highest honors in the Commonwealth College

**Positions**

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|---|---|
| Assistant Professor, University of Massachusetts Amherst | 2019 — |
| Associate Faculty, Cosmic Dawn Center, Copenhagen, Denmark | 2017 — |
| Assistant Professor, University of Connecticut (research leave AY16/17) | 2016-2019 |
| *Career Break: Maternity Leave* | 4/2017-8/2017 |
| NASA Hubble Fellow, University of Massachusetts Amherst | 2015-2017 |
| *Career Break: Maternity Leave* | 3/2013-5/2013 |
| NASA Postdoctoral Program Fellow, Goddard Space Flight Center | 2012-2015 |
| *Career Break: Maternity Leave* | 12/2010-2/2011 |
| Graduate Research Assistant, Yale University | 2006-2012 |
| Graduate Research Assistant, Boston University | 2005-2006 |
| Undergraduate Research Assistant, UMass Amherst | 2004-2005 |
| REU Intern, Harvard Smithsonian Center for Astrophysics | 2003 |

**Honors & Awards**

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|---|---|
| Lilly Fellowship for Teaching Excellence, UMass Amherst | 2021 |
| Alfred P. Sloan Foundation Fellowship | 2019 |
| Dirk Brouwer Memorial Prize, Yale University | 2015 |
| Mary Dailey Irvine Prize, Five College Astronomy Department | 2005 |
| Outstanding Undergraduate Award, UMass Amherst | 2005 |
| William F. Field Alumni Scholar, UMass Amherst | 2004 |
| Hasbrouck Scholarship Award, UMass Amherst | 2004 |

**Colloquia & Invited Talks**

- Invited Review Talk, "*The Main Sequence of Star-forming Galaxies*", EAS Meeting, Leiden NL (Virtual; 7/2021)
- Colloquium, Space Telescope Science Institute, Baltimore MD (Virtual; 5/2021)
- Colloquium, Queens University, Kingston Canada (Virtual; 9/2020)
- Invited Talk, Subaru 20th Symposium, Waikaloa Beach, HI (11/2019)
- Invited Talk, ITC Battlestar Galactica Edition, Cambridge MA (4/2019)
- Colloquium, University of Massachusetts, Amherst MA (3/2019)

- Invited Talk, "*Extremely Big Eyes on the Early Universe*", UCLA, CA (1/2019)
- Invited Talk, "*Massively Parallel Large Area Spectroscopy from Space*", ATLAS Probe Community Workshop, Pasadena, CA (10/2018)
- Invited Talk, WFIRST Deep Fields Workshop, Princeton NJ (8/2018)
- Colloquium, Institute for T
- Invited Talk, LUVOIR Seminar, Goddard Space Flight Center (5/2018)
- Invited Talk, Galaxy & Cosmology Seminar, CfA, Cambridge MA (2/2018)
- Invited Talk, WFIRST Session, 231st AAS Meeting, Washington DC (1/2018)
- Invited Talk, LUVOIR Session, 231st AAS Meeting, Washington DC (1/2018)
- Colloquium, Boston University, Boston MA (10/2017)
- Colloquium, Yale University, New Haven CT (9/2017)
- Invited Review Talk, *"A Decade of the Star-Forming Main Sequence",* Lorentz Center Workshop, Leiden NL (9/2017)
- Invited Talk, Hubble Fellows Symposium, Baltimore MD (3/2017)
- Colloquium, University of Kansas, Lawrence KS (3/2017)
- Colloquium, University of Connecticut, Storrs CT (3/2017)
- Colloquium, MIT, Cambridge MA (2/2017)
- Colloquium, Wesleyan University, Middletown, CT (11/2016)
- Invited Talk, Hubble Fellows Symposium, Baltimore, MD (3/2016)
- Colloquium, Penn State, State College, PA (2/2016)
- Colloquium, Amherst College, Amherst, MA (1/2016)
- Invited Talk, LUVOIR Session, 227th AAS Meeting, Kissimmee, FL (1/2016)
- Colloquium, University of Michigan, Ann Arbor, MI (10/2015)
- Colloquium, University of Texas at Austin, Austin TX (9/2015)
- Invited Talk, Hubble 25th Symposium, Baltimore MD (4/2015)
- Colloquium, University of Massachusetts, Lowell MA (3/2015)
- Colloquium, Brown University, Providence RI (2/2015)
- Colloquium, Vassar College, Poughkeepsie NY (2/2015)
- Invited Talk, 3D-HST Session, 225th AAS Meeting, Seattle WA (1/2015)
- Colloquium, University of Massachusetts, Amherst MA (9/2013)
- Invited Talk,*"Watching Galaxies Grow Up"*, Ringberg Castle, DE (12/2011)

28 additional contributed talks at professional conferences and workshops (since 2008), plus 20 seminars (since 2011) and 4 poster presentations (2004–2011).

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Research Mentorship

***Postdoctoral Researchers:***

- Sinclaire Manning, NASA Hubble Fellow, faculty sponsor (UMass; 2021 —)
- Mimi Song, 3D-Herschel NASA/ADAP Project (UMass; 2019 —)

***Graduate Students:***

- Sarah Bodansky,*"What and where: Understanding the tangled relation between dust mass and obscuration in high redshift galaxies"* (UMass; 1st+2nd year project, co-supervised with Alexandra Pope, 2021 —)
- Joyce Caliendo,*"Are the early quenched galaxies 'running on empty' or inefficient at converting fuel into new star formation?"* (UMass; 1st+2nd year project, co-supervised with Alexandra Pope, 2021 —)

***Graduate Students (continued):***

- Maike Clausen, *"Sizes of post-starburst galaxies in 3D-DASH"* (UMass; visiting graduate student from MPIA Heidelberg, 2021 —)
- Roxana Popescu, *"Spatially resolved maps of reconstructed strong lensed quiescent galaxies at z˜2"* (UMass; 2nd year project, 2021 —)
- Sam Cutler, *"Diagnosing DASH: Analyzing Morphologies in the COSMOS-DASH Survey"* (UMass; 1st year project/starting PhD thesis, 2019 —)
- Mohammad Akhshik, *"The Lensed Perspective: Searching for signatures of inside-out quenching"* (UConn; PhD Thesis, 2016 —)
- Jonathan Mercedes Feliz, *"Testing the level of obscured star formation in quiescent galaxies"* (UConn; PhD 1st year project, 2018 - 2019)
- Claire Dickey, *"The Relation between [OIII]/Hβ and Specific Star Formation Rate in Galaxies at z=2"* (Yale University; co-advising, 2015 - 2016)

***Undergraduate Students:***

- Zachary Webb, *"Testing UV+IR star formation rates with the SIMBA cosmological simulations"* (UMass; Spring 2021 —)
- Lillian Wright, *"Hunting for Hidden Treasures in the REQUIEM Survey"* awarded David J. Van Blerkom Research Scholarship Summer 2020, NASA Space Grant Scholarship Summer 2020/Fall 2021 (UMass; Spring 2020 —)
- Joyce Caliendo, *"A Closer Look into the Quenching of a Distant Compact Galaxy"* , awarded SURF for Summer 2019 (UConn; Spring 2019 - present)
- Tyler Metivier, *"Simulating the Detectability of Tidal Features in the Distant Universe"*, awarded NASA CT Space Grant Undergraduate Research Fellowship in Spring 2018, (UConn; Fall 2016 — present)
- Alexandra Cain, *"Resolving a Distant Dusty Galaxy with Hubble Data"* (UConn; Spring 2018 - Spring 2019)
- Sam Cutler, *"Examining High Redshift Rotation Curve Outside the Local Universe",* awarded NASA CT Space Grant Undergraduate Research Fellowship in Summer 2018, (UConn; Spring 2017 - Spring 2019)
- Rochelle Horanzy, *"The Ultimate LEGA-C: Does age really drive the spread in quiescent galaxy colors?"* (UConn; Fall 2016 - Spring 2018)
- Mohammad Ashas, "*Calibrating the Hubble Space Telescope Legacy Field Data"* (UConn; Fall 2016 - Spring 2018)
- Warren Sharpp (FCAD Intern/UMass Amherst; Summer 2016 - Fall 2016)
- Daniel Lange-Vagle (Tufts University; Fall 2014 - Summer 2015)
- Michael Alburger (NASA Intern/Bucknell University; Summer 2014)

***High School Students:***

- Matthew Bzowyckyj (Kingwood Oxford/UConn, Summer 2018)

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## Teaching

**ASTRO301:** Writing About Astronomy, UMass Amherst (*3 credits*)

- Fall 2021 (11 students, 1/2 graduate TA)

**ASTRO452H:** Astrophysics II: Galaxies, UMass Amherst (*4 credits*)

- Spring 2021 (16 students, 1/2 graduate TA)

**ASTRO792A:** Review of Current Literature, UMass Amherst (*1 credit*)
- Fall 2020 (20 graduate students, co-taught with Alexandra Pope)

**ASTRO191A:** First Year Seminar, UMass Amherst (*1 credit*)
- Fall 2020 (46 students, co-taught with Alexandra Pope)

**ASTRO100H:** Exploring the Universe, UMass Amherst (*4 credits*)
- Spring 2020 (16 students, 1/2 graduate TA)

**PHYS1025Q:** Introductory Astronomy, UConn (*4 credit lab course*)
- Fall 2018 (89 students, 1 graduate TA)
- Fall 2017 (84 students, 2 graduate TAs, 1 undergrad TA)

**PHYS4720/6720:** Galaxies and Interstellar Medium, UConn (*3 credits*)
- Spring 2019 (12 undergraduates, 2 graduate students)

**Teaching Honors:**
- 2021 Lilly Fellowship of Teaching Excellence
- UConn Provost's Letter of Teaching Excellence, Spring 2019

**Education Training:** *Online courses and in-person workshops introducing evidence-based teaching best practices in STEM disciplines.*
- New Faculty in Physics & Astronomy Workshop (2020)
- Teaching Excellence Workshop, Center for Astronomy Education (2016)
- University Teaching 101, Johns Hopkins University (2014)
- Evidence-Based Undergraduate STEM Teaching, Vanderbilt (2014)

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## Outreach (select)

- NSF-IRES DAWN Scholars Program, *Program Director, international summer research experience at the Cosmic Dawn Center in Copenhagen Denmark* (Summer 2019, 2021; 2020 cancelled due to COVID-19; dawnires.com)
- Panelist, UConn Science Salon, *"Spacing Out: Ancient Stargazers to Modern Astrophysicists",* Talcott Mountain Science Center (November 2018)
- Advised students in organizing Solar Viewing Event and Night Sky Tours for the UConn SPARK summer camp (Summer 2018)
- Public Lecture, Westport Astronomical Society (July 2017)
- Co-organizer, Solar Eclipse Viewing Party, UConn (*attendence estimated at 2000 people; local TV and news media coverage;* August 2017)
  - AAS Ambassador (*mentoring/training, access to resources and contacts in the Education & Public Outreach astronomy community,* 2014 - present)
  - Outreach presentations (*including visits to 4 secondary schools and 5 universities*, 2011-2018)
  - Ask an Astrophysicist, NASA Goddard Space Flight Center (2014)

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## Professional Service (select)

***Service to the Scientific Community:***

- *NASA Mission Concept Studies*:
  - CETUS Space Probe Mission Concept Design (2018 - 2020)
  - LUVOIR Cosmic Origins Science Working Group (2016 - 2018)

    - LUVOIR High Definition Imager Working Group (2016 - 2018)
    - Participant in WFIRST study group, NASA/GSFC (2014–2015)
- *Science Organizing Committees*: Subaru 20th Anniversary Conference (November 2019); CANDELS@UMass (October 2018); *"Massive Beasts of the Cosmos"*, Kruger Park, South Africa (July 2016)
- *External Reviews*: Canada Time Allocation Committee, Chinese Telescope Access Program, NASA Postdoctoral Program Fellowship, NASA Earth and Space Science Fellowship, Sapling Learning (2017 - present)
- *Panel Reviews*:
    - *James Webb Space Telescope* Cycle 1 TAC and Financial Review Panelist (2021)
    - *Hubble Space Telescope* Cycle 24+26 Review Panelist (2016, 2018)
    - National Science Foundation Review Panelist (2014, 2015)
- *Referee*: ApJ, ApJ Letters, MNRAS, Nature Astronomy, A&A, and PASA (2009-present)

***Service to the UMass Community* (2019 — present):**

- *Departmental Committees*: Graduate Admissions Committee (2019, 2021), Graduate Recruitment Committee (2019 —), Second Year Exam Committee (2020), Department Personel Committee (2019, 2021)
- Class of 2024 Astronomy Majors Co-Advisor (17 advisees; 2020-present)
- Organized Summer Undergraduate Research Symposium (August 2020)

***Service to the UConn Community* (2016 — 2019):**

- Development of Astrophysics Minor (approved starting AY18/19, co-led with Prof. Battersby and Trump), including creation of 4 astrophysics courses: PHYS 2701, 2702, 6710/4710, 6720/4720*, and PHYS1040QE (*=instructor of record).
- PI of initative to adopt an open educational resource textbook in Introductory Astronomy (PHYS1025Q), awarded through the UConn Open and Affordable Initiative (Fall 2017)
- PI of course redesign of Introductory Astronomy through Provost's Large

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Successful Grants & Proposals (select)

**Total Funding (2017 - present)** = $2M (external), $36K (internal)

- James Webb Space Telescope Cycle 1 Program GO-1837 *"PRIMER: Public Release IMaging for Extragalactic Research"* (Co-I; budget pending)
- James Webb Space Telescope Cycle 1 Program GO-1895 *"FRESCO: The First Reionization Epoch Spectroscopic COmplete Survey"* (Co-I; budget pending)
- James Webb Space Telescope Cycle 1 Program GO-2514 *"PANORAMIC – A Pure Parallel Wide Area Legacy Imaging Survey at 1-5 Micron"* (Co-I; budget pending)
- James Webb Space Telescope Cycle 1 Program GO-2561 *"UNCOVER: Ultra-deep NIRCam and NIRSpec Observations Before the Epoch of Reionization"* (Co-I; budget pending)
- James Webb Space Telescope Cycle 1 Program GO-1727 *"COSMOS-Webb: The Webb Cosmic Origins Survey"* (Co-I)

- NASA Hubble Postdoctoral Fellowship Award for Dr. Sinclaire Manning (Admin PI/Faculty Sponsor; $378k, 9/1/21 — 8/31/24)
- NASA FINESST Award for UConn PhD student Mohammad Akhshik (Admin PI/Faculty Sponsor; $135k, 9/1/19 — 8/31/22)
- ALMA Cycle 7 Program, "*Running on Empty: Probing Gas Reservoirs of the REQUIEM Lensed Quiescent Galaxies at z=1.6-3.2"* (PI; 2019)
- Spitzer DDT Proposal "*Resolving QUIEscent Magnified (REQUIEM) Galaxies: The Missing (Spitzer/IRAC) Piece of the Puzzle*" (PI, 0.3h)
- Alfred P. Sloan Fellowship ($70k; 9/1/19 – 8/31/21)
- Hubble Space Telescope Cycle 26 Program GO-15663 "*REsolving QUIEscent Magnified (REQUIEM) Galaxies: Uncovering Formation Pathways via Spatially Resolved Gradients at z=1.6-2.9"* (Co-PI; $408k; 6/1/19 – 5/31/22)
- NASA/ADAP Grant *"3D-Herschel: Completing the CANDELS/3D-HST Legacy with a New Bayesian Framework for Deriving Galaxy Properties"* (PI; $418k; 1/1/19 – 1/31/22)
- NSF/IRES Grant *"IRES Track I: Exploring New Horizons in the Observable Universe at the Cosmic Dawn Center of Excellence in Copenhagen"* (PI; $300k; 2/1/19 – 1/31/22)
- NSF/IRES Grant *"IRES Track I: Exploring New Horizons in the Observable Universe at the Cosmic Dawn Center of Excellence in Copenhagen"* (PI; $300k; 2/1/19 – 1/31/22)
- ALMA Cycle 6 Program, "*Running on Empty: Probing the Gas Reservoirs of Lensed Quiescent Galaxies at z=1.6-3.2"* (PI; 2018)
- Cosmic Dawn Center of Excellence, Neils Bohr Institute, funded by the Danish National Research Foundation (Associate Faculty; 2018 – 2028)
- NASA Connecticut Space Grant Faculty Seed Research Grant ($10k)
- Hubble Space Telescope Cycle 25 Program AR-15027 "*Completing the Legacy of Hubble's Wide/Deep Fields: An Aligned Complete Dataset of 1220 Orbits on the GOODS-N Region"* (Co-I; $669k/total, $110k/UMass)
- NASA Probe-class Mission Concept, *"Cosmic Evolution through UV Spectroscopy (CETUS)"*, (Science Co-I; 2017)
- UConn Provost's Open Educational Resource Award, *"Cosmic Dawn at UConn: Astronomy for Everyone"* (PI; $10k; 2017)
- UConn Provost's Large Course Redesign Grant (Co-PI; $26k; 2017)
- Hubble Space Telescope Cycle 24 Program GO-14622, *"A Chance Alignment: Resolving a Massive Compact Galaxy Actively Quenching at z=1.8"* (12 orbits; PI; $138k; 02/01/17 - 01/31/20)
- 2015 Hubble Prize Fellowship HF2-51368.001, *"Spatially-Resolved Stellar Populations and Dust in Distant Galaxies"*
- American Astronomical Society FAMOUS Travel Grant ($1k; 2015)
- Hubble Space Telescope Cycle 18 Treasury Program GO-12177, *"3D-HST: A Spectroscopic Galaxy Evolution Treasury"* (248 orbits; Co-I)
- NOAO Programs 2010A-0015, 2010B-0407, and 2011B-0509 (Co-I)

## Media & Press Releases (select)

- *Press Release*: ALMA Scientists Uncover the Mystery of Early Massive Galaxies Running on Empty (September 2021)
- *Press Release*: Rerun of Supernova Blast is Expected to Appear in 2037 (September 2021)
- Live TV Interview at WGBY's Connecting Point (November 2019)
- *Press Release*: Cosmic Yeti from the Dawn of the Universe Found Lurking in Dust (October 2019)
- *News Article*: UConn Professors Explore Universe with NASA (Dec 2017)
- *Press Release*: Hubble Pushed Beyond Limits to Spot Clumps of New Stars in Distant Galaxy (July 2017)
- *Press Release*: New Astronomy Center will reveal Cosmic Dawn (Apr 2017)
- 5 Live TV Interviews and Instagram Video to celebrate Hubble's 25th Anniversary, NASA/Goddard TV Media Studio (March & April 2015)
- *Press Release*: NASA Telescopes Help Uncover Early Construction Phase of Giant Galaxy (August 2014)
- *Press Release*: Hubble Reveals First Scrapbook Pictures of Milky Way's Formative Years (November 2013)
- *Press Release*: Astronomers Discover that Galaxies are either Awake or Asleep (June 2010)

## Additional Experience

**Computing:** Experience with IDL, IRAF, and Python

**Telescopes:**

- *Hubble Space Telescope* (WFC3, ACS, WFPC2)
- *Spitzer Space Telescope* (IRAC, MIPS)
- *Atacama Large Millimeter Array*
- Whipple Observatory 6.5m-MMT (2 nights; MMIRS)
- Kitt Peak 4m-Mayall (26 nights; NEWFIRM)
- Cerro-Tololo 4m-Blanco (5 nights; NEWFIRM)
- *XMM-Newton* and *Chandra* X-ray Observatories.

**Surveys and Large Collaborations:**

- JWST FRESCO Survey (2021 – present)
- JWST COSMOS-Webb Treasury Survey (2021 – present)
- JWST UNCOVER Treasury Survey (2021 – present)
- JWST PRIMER Treasury Survey (2021 – present)
- JWST PANORAMIC Survey (2021 – present)
- Pirate (2020 – present)
- 3D-DASH Treasury Survey (2020 – present)
- REQUIEM Galaxy Survey (2018 – present)
- Northeast Participation Group, Prime Focus Spectrograph (2018 – present)
- Hubble Frontier Fields (HFF; 2015 – 2017)
- SDSS Giant Arcs Survey (SGAS; 2012 – present)
- FourStar Galaxy Evolution Survey (ZFOURGE; 2012 – 2016)
- 3D-HST: Spectroscopic Galaxy Evolution Survey with HST (2011 – 2016)
- NEWFIRM Medium-Band Survey (NMBS and NMBS-II; 2009 – 2012)

**Professional Memberships:**

- American Astronomical Society (2003 — present)
- International Astronomical Union (2018 — present)

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References

**Prof. Pieter van Dokkum**
Yale University
Department of Astronomy
260 Whitney Avenue
New Haven, CT 06517
+1 (203) 432-3019
pieter.vandokkum@yale.edu

**Prof. Marijn Franx**
Leiden Observatory
P.O. Box 9513
NL-2300 RA
Leiden, Netherlands
+31 (0) 71-527-5870
franx@strw.leidenuniv.nl

**Prof. Mauro Giavalisco**
UMass Amherst
Department of Astronomy
710 North Pleasant Street
Amherst, MA 01003
+1 (413) 545-4767
mauro@astro.umass.edu

*Additional references available upon request:*

**Dr. Jane R. Rigby**
Goddard Space Flight Center
Astrophysics Science Division
8800 Greenbelt Road
Greenbelt, MD 20771
+1 (301) 286-1507
jane.r.rigby@nasa.gov

**Prof. Sandra Faber**
Univ. of California Santa Cruz
Astronomy & Astrophysics Dept.
1156 High Street
Santa Cruz, CA 95064
+1 (831) 459-2944
faber@ucolick.org