

Raymond C. Simons

University of Connecticut
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Positions Held

2022 - Present **CLAS Research & Teaching Fellow**, University of Connecticut
2019 - 2022 **Giacconi Fellow**, Space Telescope Science Institute
2018 - 2019 **Postdoctoral Researcher**, Johns Hopkins University
2012 - 2018 **Graduate Research and Teaching Assistant**, Johns Hopkins University

Education

2018 **Ph.D.** Johns Hopkins University, Physics and Astronomy
Thesis: *Assembly of Disk Galaxies from the Peak of Cosmic Star-Formation to Today*
(advisor: Susan A. Kassin)
2012 **B.S.** Florida Institute of Technology, Physics and Astrophysics, Summa Cum Laude

Teaching Experience, as instructor of record

Physics I for Engineers, University of Connecticut, Spring 2023
(*upcoming*) **Introductory Astronomy**, University of Connecticut, Spring 2024

Refereed Publications, as lead author or student-led as primary advisor

10. Figuring Out Gas & Galaxies in Enzo (FOGGIE): The Angular Momentum of Galaxies and their Circumgalactic Gas,
Simons, R.C., et al., in prep., anticipated submission to ApJ in Oct 2023. Available at this [link](#).
9. The Physical Thickness of Stellar Disks to $z \sim 2$,
Hamilton-Campos, K, **Simons, R. C.**, et al., 2023, ApJ in press, arXiv, 2303.0417
(student-led)
8. CLEAR: Survey Overview, Data Analysis and Products,
Simons, R.C., Papovich, C, Momcheva, I, et al., 2023, ApJS, 266, 13
7. CLEAR: The Gas-Phase Metallicity Gradients of Star-Forming Galaxies at $0.6 < z < 2.6$,
Simons, R.C., Papovich, C, Momcheva, I, et al., 2021, ApJ, 923, 203
6. Figuring Out Gas & Galaxies In Enzo (FOGGIE). IV. The Stochasticity of Ram Pressure Stripping in Galactic Halos,
Simons, R.C., Peeples, M.S., Tumlinson, J, et al., 2020, ApJ, 905, 167
5. Distinguishing Mergers and Disks in High-redshift Observations of Galaxy Kinematics,
Simons, R.C., Kassin, S.A., Snyder, G.F., et al., 2019, ApJ, 874, 59
4. $z \sim 2$: An Epoch of Disk Assembly,
Simons, R.C., Kassin, S.A., Weiner, B.J., et al., 2017, ApJ, 843, 46S
3. Kinematic Downsizing at $z \sim 2$,
Simons, R.C., Kassin, S.A., Trump, J.R., et al., 2016, ApJ, 830, 14S
2. A Transition Mass in the Local Tully-Fisher Relation,
Simons, R.C., Kassin, S.A., Weiner, B.J., et al. 2015, MNRAS, 452, 986s
1. The Ultraviolet View of the Magellanic Clouds from GALEX,
Simons, R.C., Thilker, D, Bianchi, L., Wyder, T., 2014, AdSpR, 53, 939

Successful Grants and Proposals, as PI

- PI, Cycle 8 ALMA Proposal
CO Kinematics at Cosmic Noon: Timing the Redistribution of Metals Around Galaxies
23 hours
- PI, Cycle 28 HST Proposal #16151, 2020
On The Rapid Evolution of Galaxy Metallicity Gradients: A Bridge Between Theory and Observations
Theory, 140K
- PI, Cycle 25 HST Proposal #15052, 2017
Timing Thick Disk Formation: an indirect census of stellar kinematics to $z \sim 2$ from legacy Hubble imaging
Archival, 130K

Awarded Supercomputer Time, as PI

- PI, NASA High-End Computing Program, Pleiades Supercomputer, 2020-2022
4.2 million CPU hours

Student Mentorship, as primary advisor

2023 - Present	Madisyn Brooks	UConn Graduate Student
2019 - Present	Mac Semmelroth	UConn Undergraduate Student
2019 - 2023	Kathleen Hamilton-Campos	JHU Graduate Student STScI Space Astronomy Summer Program intern

Student Mentorship, as secondary advisor

2020	Alexander de la Vega	JHU Graduate student
2019	Cecilia Molina	STScI Space Astronomy Summer Program intern

Successful Grants and Proposals, as Co-I and Collaborator

- Co-I, Cycle 31 HST, AR-17549
Predicting Dwarf Galaxy Evolution in Resolved Milky Way Halos
PI Anna Wright
- Co-I, Cycle 2 JWST, AR-3305
Analyzing Giant Clumps in JWST Images of Star-Forming Galaxies to Constrain Feedback
PI Yicheng Guo
- Co-I, Cycle 1 JWST, GO-02123
A Pathfinder for JWST Spectroscopy: Deep High Spectral Resolution Maps of Galaxies over $1 < z < 6$
PI Susan Kassin
- Co-I, Cycle 1 JWST, GO-02123
A Pathfinder for JWST Spectroscopy: Deep High Spectral Resolution Maps of Galaxies over $1 < z < 6$
PI Susan Kassin
- Co-I, Cycle 1 JWST, GO-02079
The Webb Deep Extragalactic Exploratory Public (WDEEP) Survey: Feedback in Low-Mass Galaxies from Cosmic Dawn to Dusk
Co-PIs Steven Finkelstein, Casey Papovich, Norbert Pirzkal

- Co-I, Cycle 1 JWST, GO-01837
PRIMER: Public Release IMaging for Extragalactic Research
PI James Dunlap
- Science Collaborator, JWST Early Release Science Program #1345
The Cosmic Evolution Early Release Science (CEERS) Survey
PI Steven Finkelstein
- Co-I, Cycle 29 HST, AR-16640
Braving the Storm: Quantifying the Effects of Ram Pressure and Stellar Feedback in the Large Magellanic Cloud
PI Yong Zheng
- Co-I, Cycle 29 HST, AR-16609
Peering Through The Dust: Paschen-beta Indicators of Star Formation and Dust Attenuation
PI Nikko Cleri
- Co-I, Cycle 24 HST Proposal AR-14578
Elongated Galaxies and the Emergence of Disks
PI Joel Primack
- Co-I, NSF AAG #1815251
When are Disk Galaxies First Assembled?
PI Susan Kassin

Observing Experience

- Keck Observatories, 4.5 nights
- Morris W. Offit Observatory, 15 nights
- Olin Observatory, 12 nights

Teaching Experience, as graduate teaching assistant or guest lecturer

Introduction to Modern Astrophysics Fall 2023

Guest Lecturer (University of Connecticut)

Cosmology Fall 2014, Spring 2015, Fall 2015

Teaching Assistant; Professor: Dr. Chuck Bennett (Johns Hopkins University)

Planets and the Universe Fall 2015

Teaching Assistant; Professor: Dr. Colin Norman (Johns Hopkins University)

Radiative Transfer Spring 2015

Teaching Assistant; Professor: Dr. David Neufeld (Johns Hopkins University)

Classical Mechanics Fall 2014

Teaching Assistant; Professor: Dr. Julian Krolik (Johns Hopkins University)

Light and Optics Spring 2013

Teaching Assistant; Professor: Dr. Brice Menard (Johns Hopkins University)

General Physics 1 Fall 2012

Teaching Assistant; Professor: Dr. David Kaplan (Johns Hopkins University)

Refereed Publications, as co-author

41. 3D Galaxy Shape Modeling with JWST-CEERS,
Pandya, V., et al., submitted to ApJ
40. CEERS Key Paper VIII: Emission Line Ratios from NIRSpec and NIRCам Wide-Field Slitless Spectroscopy at $z > 2$,
Backhaus, Bren et al., submitted to ApJ
39. The Next Generation Deep Extragalactic Exploratory Public (NGDEEP) Survey
Bagley, M.B., et al., submitted to ApJ
38. CEERS: Diversity of Lyman-Alpha Emitters during the Epoch of Reionization
Jung, I., et al., submitted to ApJ
37. Extremely red galaxies at $z = 5-9$ with MIRI and NIRSpec: dusty galaxies or obscured AGNs?
Barro, Guillermo et al., submitted to ApJ
36. ALMA FIR View of Ultra High-redshift Galaxy Candidates at $z \sim 11-17$: Blue Monsters or Low- z Red Interlopers?
Fujimoto, S., et al., 2023, ApJ in press
35. A CEERS Discovery of an Accreting Supermassive Black Hole 570 Myr after the Big Bang: Identifying a Progenitor of Massive $z > 6$ Quasars,
Larson, R., et al., 2023, ApJ, 953, 29
34. Using $[\text{Ne V}]/[\text{Ne III}]$ to Understand the Nature of Extreme-ionization Galaxies,
Clero, N., et al., 2023, ApJ, 953, 10
33. Spectroscopic Confirmation of CEERS NIRCам-selected Galaxies at $z = 8-10$
Arrabal Haro, P., et al., 2023, ApJ, 951, 22
32. CLEAR: The Morphological Evolution of Galaxies in the Green Valley
Estrada-Carpenter, V., et al., 2023, ApJ, 951, 115
31. CEERS: Spatially Resolved UV and Mid-infrared Star Formation in Galaxies at $0.2 < z < 2.5$: The Picture from the Hubble and James Webb Space Telescopes
Shen, L., et al., ApJ, 2023, 950, 7
30. CLEAR: High-ionization $[\text{Ne V}]\lambda 3426$ Emission-line Galaxies at $1.4 < z < 2.3$
Cleri, N.J., et al., 2023, ApJ, 948, 112
29. Figuring Out Gas & Galaxies in Enzo (FOGGIE). VI. The Circumgalactic Medium of L^* Galaxies Is Supported in an Emergent, Nonhydrostatic Equilibrium
Lochhaas, C., et al., 2023, ApJ, 948, 43
28. CEERS Key Paper. III. The Diversity of Galaxy Structure and Morphology at $z = 3-9$ with JWST
Kartaltepe, J. S., et al., 2023, ApJ, 946, 15
27. The Physical Conditions of Emission-line Galaxies at Cosmic Dawn from JWST/NIRSpec Spectroscopy in the SMACS 0723 Early Release Observations
Trump, J.R., Arrabal Haro, P., **Simons, R.C.**, et al., 2023, ApJ, 945, 35
26. Dusty Starbursts Masquerading as Ultra-high Redshift Galaxies in JWST CEERS Observations
Zavala, J.A., et al., 2023, ApJ, 943, 9
25. CLEAR: Spatially Resolved Emission Lines and Active Galactic Nuclei at $0.6 < z < 1.3$
Backhaus, B., et al., 2023, ApJ, 943, 37
24. A Long Time Ago in a Galaxy Far, Far Away: A Candidate $z \sim 12$ Galaxy in Early JWST CEERS Imaging
Finkelstein, S. L., et al., 2022, ApJ, 940, 55
23. A First Look at the Abundance Pattern-O/H, C/O, and Ne/O-in $z > 7$ Galaxies with JWST/NIRSpec
Arellano-Córdova, K.Z., et al., 2022, ApJ, 940, 23

22. CLEAR: The Ionization and Chemical-enrichment Properties of Galaxies at $1.1 < z < 2.3$
Papovich, C., **Simons, R.C.**, et al., 2022, 937, 22
21. CLEAR: The Evolution of Spatially Resolved Star Formation in Galaxies between $0.5 < z < 1.7$ Using Ha Emission Line Maps
Matharu, J., et al., 2022, ApJ, 937, 16
20. CLEAR: Boosted Ly α Transmission of the Intergalactic Medium in UV-bright Galaxies
Jung, I., et al., 2022, ApJ, 933, 16
19. CLEAR: Emission Line Ratios at Cosmic High Noon,
Backhaus, B., et al., 2022, ApJ, 926, 161
18. CLEAR: Paschen- β Star Formation Rates and Dust Attenuation of Low Redshift Galaxies,
Cleri, N., et al., 2022, ApJ, 929, 3
17. Lower-Luminosity Obscured AGN Host Galaxies are Not Predominantly in Major-Merging Systems at Cosmic Noon,
Lambrides, E., et al., 2021, ApJ, 919, 129
16. Merger or Not: Accounting for Human Biases in Identifying Galactic Merger Signatures,
Lambrides, E., et al., 2021, ApJ, 919, 43
15. Figuring Out Gas & Galaxies In Enzo (FOGGIE) V: The Virial Temperature Does Not Describe Gas in a Virialized Galaxy Halo,
Lochhaas, C., et al., 2021, ApJ, 922, 121
14. CLEAR. II. Evidence for Early Formation of the Most Compact Quiescent Galaxies at High Redshift,
Estrada-Carpenter, V., et al., 2020, ApJ, 898, 171E
13. Figuring Out Gas & Galaxies in Enzo (FOGGIE). III. The Mocky Way: Investigating Biases in Observing the Milky Way's Circumgalactic Medium,
Zheng, Y., et al., 2020, ApJ, 894, 143Z
12. HST Imaging of the Ionizing Radiation from a Star-forming Galaxy at $z = 3.794$,
Ji, Z., et al., 2020, ApJ, 888, 109J
11. Studying the Physical Properties of Tidal Features I. Extracting Morphological Substructure in CANDELS Observations and VELA simulations,
Bharadwaj Mantha, K., et al., 2019, MNRAS, 486, 2643M
10. The Chemical Imprint of Clump Formation at High Redshift. I. A Thin-Thick Disc Dichotomy,
Clarke, A.J., et al., 2019, MNRAS, 484, 3476C
9. Galaxy Inclination and the IRX- β Relation: Effects on UV Star-Formation Rate Measurements at Intermediate to High Redshifts,
Wang, W., et al., 2018, ApJ, 869, 161W
8. Evidence of a Flat Outer Rotation Curve in a Starbursting Disk Galaxy at $z = 1.6$,
Drew, P., et al., 2018, ApJ, 869, 58D
7. Deep Learning Identifies High- z Galaxies in a Central Blue Nugget Phase in a Characteristic Mass Range,
Huertas-Company, M., et al. 2018, ApJ, 858, 114H
6. The Evolution of Star Formation Histories of Quiescent Galaxies,
Pacifi, C., et al. 2016, ApJ, 832, 79P
5. Beyond Spheroids and Discs: Classifications of CANDELS Galaxy Structure at $1.4 < z < 2$ via Principal Component Analysis,
Peth, M., et al. 2016, MNRAS, 458, 963P
4. ZFOURGE/CANDELS: On the Evolution of M* Galaxy Progenitors from $z = 3$ to 0.5,
Papovich, C., et al. 2015, ApJ, 803, 26

3. Stellar Masses from the CANDELS Survey: The GOODS-South and UDS Fields, Santini, P., et al. 2015, ApJ, 801, 97
2. Keck-I MOSFIRE Spectroscopy of Compact Star-forming Galaxies at $z \gtrsim 2$: High Velocity Dispersions in Progenitors of Compact Quiescent Galaxies, Barro, G., et al. 2014, ApJ, 795, 145
1. Optical Polarization and Spectral Variability in the M87 Jet, Perlman, E.S., et al. 2011, ApJ, 743, 119

Non-refereed Publications, as co-author

2. Indirectly Measuring Stellar Velocity Dispersions in High Redshift Disk Galaxies, Hamilton-Campos, K., **Simons, R.C.**, et al., 2020, RNAAS, 4, 11 (student-led)
1. Understanding the circumgalactic medium is critical for understanding galaxy evolution, Peeples, M., et al., 2019, BAAS, 51c, 369P

Selected Colloquium, Seminar, and Conference Presentations

- Galaxy Formation Workshop, Aug 2023 (Santa Cruz, CA)
- JWST/CEERS Meeting, Apr 2023 (University of Texas)
- Astrophysics Seminar, Nov 2022 (University of Connecticut)
- Astrophysics Seminar, Mar 2022 (University of Missouri)
- Colloquium, Feb 2022 (Saint Mary's University)
- Hopkins at Home, Oct 2021 (Johns Hopkins University)
- CANDELS SED Fitting Group, Mar 2021 (online)
- CGI Seminar, Mar 2021 (University of California, Santa Cruz)
- HiGEM Seminar, July 2020 (Harvard Center for Astrophysics, virtual)
- AAS235 - The ISM of High Redshift SFGs, Jan 2020 (Honolulu, HI)
- Mitchell Institute Seminar, October 2019 (College Station, TX)
- STScI HotSci, July 2019 (Baltimore, MD)
- Galaxy Formation Workshop, Aug 2019 (Santa Cruz, CA)
- Extremely Big Eyes on the Early Universe, Sep 2019 (Rome, IITL)
- AAS231 - Galaxy Formation and Evolution, Jan 2018 (National Harbor, MD)
- FLASH Seminar, Dec 2017 (Tucson, AZ)
- Astro Seminar, Dec 2017 (Riverside, CA)
- UCLA Galread, Dec 2017 (Los Angeles, CA)
- Carnegie Lunch Talk, Nov 2017 (Pasadena, CA)
- UC Davis Cosmology Seminar, Nov 2017 (Davis, CA)
- STScI Galaxy Journal Club, Nov 2017 (Baltimore, MD)

- Galaxy Formation Workshop, Aug 2017 (Santa Cruz, CA)
- Center for Computational Astrophysics, Dec 2016 (New York, NY)
- Ringberg Galaxy Meeting, Oct 2016 (Ringberg, GE)
- CAS Wine & Cheese, Oct 2016 (Baltimore, MD)
- Weekly Seminar, Sep 2016 (Swinburne, AU)
- The Changing Face of Galaxies, Sep 2016 (Tasmania, AU)
- CANDELS Team Meeting, Aug 2013, 2014, 2015, 2016, 2017 (multiple locations)
- Discs in Galaxies, July 2016 (Garching, GE)
- Yale Galaxy Lunch, Mar 2016 (New Haven, CT)
- What Shapes Galaxies, Mar 2016 (Baltimore, MD)
- UCSC Galaxy formation group, Mar 2016 (Santa Cruz, CA)
- SPINE Team Meeting, Oct 2014 (Porquerolles, FR)
- AAS223 - Evolution of Galaxy Structure, Jan 2014 (National Harbor, MD)

Professional Service

- NASA ADAP Panel Member (2020)
- National Science Foundation AAG Panel Member (2020)
- Chair of STScI CoolSci Seminar Series (2020)
- STScI Postdoctoral Fellowship Selection Committee (2021, 2022)
- STScI Colloquium Committee (2020-2022)
- STScI Spring Workshop Co-organizer (2020)
- STScI Galaxy Journal Club Co-organizer (2017-2019)
- Referee for the Astrophysical Journal (2016-present)
- Referee for the Monthly Notices of the Royal Astronomical Society (2016-present)

Membership, Collaborations, and Honors

- Chair of CEERS ISM Working Group (2022-present)
- Member of the FOGGIE, CEERS, CANDELS, and CLEAR collaborations (2018-present)
- Member of the CANDELS collaboration (2013-present)
- National Graduate Research Fellowship, Honorable Mention (2014)
- American Astronomical Society (2013-Present)
- Johns Hopkins University (JHU) Grad Student Outreach Organizing Committee (2014-2016)
- Lead Organizer for JHU Physics Demonstrations in Baltimore City Public High Schools (2014-2016)
- Malcolm Lauchheimer Scholar (2013)
- Board of Trustees Top Student in the College of Science (2011)

- Outstanding Junior in the Physics Department (2011)
- Paul Andre Hermansen Memorial Endowment Recipient (2011, 2012)
- Distinguished Student Scholar (2010, 2011, 2012)
- Physics Ambassador for the Student Advisory Committee (2011)
- Florida Bright Futures Academic Scholar (2008-2012)