

Katherine A. (Wren) Suess

UC Santa Cruz Department of Astronomy and Astrophysics
Stanford University Kavli Institute for Particle Physics and Cosmology
suess@ucsc.edu

ISB 291, Santa Cruz CA 95064

wrensuess.github.io

Research Interests

Observational galaxy formation and evolution; galaxy quenching; structural evolution of galaxies; spatially-resolved stellar population modeling; galaxy star formation histories

Education

Ph.D. Astrophysics , University of California, Berkeley	Aug 2021
<i>Advisor:</i> Mariska Kriek	
<i>Thesis:</i> The Growth & Transformation of Galaxies Across Cosmic Time	
M.A. Astrophysics , University of California, Berkeley	May 2017
B.A. Physics , <i>summa cum laude</i> , University of Colorado, Boulder	May 2015
<i>Advisor:</i> Jeremy Darling	
<i>Honors thesis:</i> Identifying OH Imposters in the ALFALFA Neutral Hydrogen Survey	

Research Positions

Stanford - Santa Cruz Cosmology Fellow , UC Santa Cruz & Stanford University	2021 - present
UC Santa Cruz Chancellor's Fellow , UC Santa Cruz	2021 - present
NSF Graduate Research Fellow , UC Berkeley	2017 - 2021
Chancellor's Fellow , UC Berkeley	2015 - 2017
Undergraduate Research Assistant , CU Boulder Astrophysical & Planetary Sciences Dept	2013 - 2015
Undergraduate Research Assistant , Laboratory for Atmospheric and Space Physics (LASP)	2013 - 2015
NSF REU Research Student , LASP and NOAA Space Weather Prediction Center	Summer 2013
Undergraduate Research Assistant , (UROP program) CU Boulder Physics Dept	2012 - 2013

Selected Awards & Honors

Mary Elizabeth Uhl Prize <i>for outstanding scholarly achievement by a graduate student finishing their dissertation in Astronomy or Physics</i>	2021
UC Berkeley Grad Slam Semifinalist (<i>final competition canceled due to COVID-19</i>)	2019
Robert J. Trumpler Graduate Excellence Award	2019
Outstanding Graduate Student Instructor	2017
NSF Graduate Research Fellowship	2016
University of California, Berkeley Chancellor's Fellowship	2015
Stephen Halley White Undergraduate Research Award	2015

PI Telescope Programs

Atacama Large Millimeter/submillimeter Array

5. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, M. Kriek, D. Narayanan, D. Setton, J. Spilker, P.-F. Wu, Cycle 8: 2021.1.00761.S, Quantifying the molecular gas reservoirs of post-starburst AGN hosts (14.5 hours)
4. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, K. Hall-Hooper, Q. Hunt, M. Kriek, D. Narayanan, D. Setton, J. Spilker, Cycle 8: 2021.1.00749.S, Mapping the molecular gas reservoirs of recently-quenched galaxies (2.6 hours)
3. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, K. Hall-Hooper, Q. Hunt, M. Kriek, D. Narayanan, D. Setton, J. Spilker, Cycle 7: 2019.1.00221.S, Mapping the molecular gas reservoirs of recently-quenched galaxies (11.4 hours)
2. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, K. Hall-Hooper, Q. Hunt, M. Kriek, D. Narayanan, D. Setton, J. Spilker, Cycle 6: 2018.1.01240.S, Mapping the molecular gas reservoir of a recently-quenched galaxy (7.0 hours)
1. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, K. Hall-Hooper, Q. Hunt, M. Kriek, D. Narayanan, D. Setton, J. Spilker, Cycle 6: 2018.1.01264.S, How did molecular gas end up tens of kiloparsecs away from a massive, recently-quenched $z \sim 0.6$ galaxy? (6.5 hours)

Gemini Observatory

1. **K. Suess**, R. Bezanson, R. Feldmann, J. E. Greene, K. Hall-Hooper, Q. Hunt, M. Kriek, D. Narayanan, D. Setton, J. Spilker, 2019B: GS-2019B-Q-232, Characterizing the sizes and morphologies of $z \sim 0.6$ gas-rich quenched galaxies (7.7 hours)

Hubble Space Telescope

1. **K. Suess**, J. Spilker, R. Bezanson, M. Kriek, J. Greene, Cycle 25: [GO 15436](#), Understanding the Origin of Large Gas Reservoirs in Recently-Quenched Galaxies (3 orbits)

Keck Observatory

3. M. Kriek*, **K. Suess**, R. Bezanson, J. Greene, J. Spilker, Spr 2019: U132, Testing the Quiescence of Massive, Gas-rich Post-starburst Galaxies (0.5 night, NIRES)
2. M. Kriek*, **K. Suess**, R. Bezanson, J. Greene, J. Spilker, Fall 2018: U093, Testing the Quiescence of Massive, Gas-rich Post-starburst Galaxies (0.5 night, NIRES)
1. M. Kriek*, **K. Suess**, R. Bezanson, J. Greene, J. Spilker, Spr 2018: U232, Testing the Quiescence of Massive, Gas-rich Post-starburst Galaxies (1 night, NIRES)

**acting PI; graduate students cannot PI UC Keck proposals*

Lick Observatory

2. **K. Suess**, M. Kriek, K. Hall-Hooper, R. Bezanson, J. Greene, B. Holden, Fall 2018: S018, Spectroscopic Confirmation of Post-Starburst Galaxies (6 nights, Kast Spectrograph)
1. **K. Suess**, M. Kriek, J. Greene, R. Bezanson, Fall 2016: S018, The origin of compact quiescent galaxies as revealed by $z \sim 0.7$ post-starburst galaxies (3 nights, ShARCS LGS)

Very Large Array

1. **K. Suess**, J. Spilker, R. Bezanson, M. Kriek, J. Greene, Spr 2018: VLA/18A-390, Understanding the Origin of Large Gas Reservoirs in Recently-Quenched Galaxies (7.5 hours; A priority)

Co-I Telescope Programs

Atacama Large Millimeter/submillimeter Array: 2017.1.01109.S, 2016.1.01126.S, & 2019.1.01286.S, 2019.1.00702.S, 2021.1.00988.S, 2021.1.01535.S, 2022.1.00604.S, PIs R. Bezanson, M. Kriek, P.-F. Wu, & D. Setton, 156.8 hours.

Gemini Observatory: GN-2018B-Q-203 & GS-2018B-Q-104, GS-2018A-FT-112, GS-2017B-Q-35, GN-2017B-Q-37, GS-2017A-Q-56, PIs R. Bezanson & Q. Hunt, GMOS, 37.53 hours.

Keck Observatory: S21 U075, F20 U054, S20 U220, F19 U171, S19 U133, F18 U094, S18 U258, F17 U147, S17 U091, PI M. Kriek, 21 nights MOSFIRE & 4 nights LRIS.

Hubble Space Telescope: Cycle 28 16201, Cycle 28 16248, PI J. Spilker, WFC3 grism & imaging, 6 orbits.

Additional Observing Experience:

Keck Observatory: OSIRIS (2 nights), MOSFIRE (1 night), LRIS (0.5 night)

Rudolph Minkowski Observational Astronomy Workshop, Lick Observatory, 2015

Teaching

Graduate Student Instructor, UC Berkeley AY160: Stellar Physics	Fall 2016
Graduate Student Instructor, UC Berkeley Astro C10: Introduction to General Astronomy	Fall 2015
Splash Instructor, "How do astronomers know anything?"	Fall 2015
Learning Assistant, CU Boulder Phys 1110: Introductory Physics for Majors	Fall 2012
Director of K-12 Education, AmeriCorps with CoPIRG Energy Service Corps	Oct 2011 - May 2012

Service

Respect Is Part of Research: peer-led sexual assault & harassment prevention workshops for incoming physics & astronomy graduate students, respectispartofresearch.com

Co-coordinator, Respect is Part of Research (with Micah Brush) 2018 - 2021
(responsibilities: develop workshop content; coordinate with university survivor support office & Title IX office; secure program funding; work with university officials, statewide Title IX office, and graduate union to expand program to all UC Berkeley graduate departments)

Member, UC Berkeley Coordinated Community Review Team for Sexual and Gender-Based Violence and Misconduct	2020-2021
Facilitator training lead, Harvard University Physics Department Caltech Astronomy Department	Aug 2020
“Respect is Part of Research” – Presentation and Q&A, UC Berkeley Graduate Assembly	Feb 2020
Lead Organizer, “How to Start a Peer-Led SVSH Prevention Program” workshop (with Micah Brush) <i>(2-day workshop attended by ~25 grad students from 10 institutions to teach the Respect is Part of Research model; 4 new RPR chapters started for Fall 2020)</i>	Jan 2020
Presentation and Climate Q&A, Physics Department Faculty Retreat	Dec 2019
“Respect is Part of Research: Peer-Led Training to Improve Departmental Climate” UC Berkeley Astronomy Lunch Talks	Oct 2019
Facilitator training lead for UC Berkeley (7 academic departments, 55 peer facilitators)	Aug 2019
Facilitator, UC Berkeley College of Chemistry Diversity & Inclusion Focus Group	Feb 2019
Respect is Part of Research Facilitator	2017 - present

Other Service

Journal Referee: ApJ, A&A	
ALMA Ambassador <i>(lead two day-long workshops to teach community members radio interferometry, from radio basics to data reduction to writing ALMA proposals)</i>	2022
ALMA Distributed Time Allocation Committee member	Cycle 8
Hubble Space Telescope Time Allocation Committee Panel Member (Galaxies)	Mid-Cycle 27, Cycle 27, Cycle 28
Facilitator, UC Berkeley Astronomy Racial Justice Book Club	Summer 2020, Fall 2020
UC Berkeley Astronomy Graduate Student Representative	2019-2020
Head of prospective graduate student visit committee, UC Berkeley	2018, 2019
Graduate student mentor, Berkeley Astronomy Department Graduate Mentoring Program	2017 - present
Prospective graduate student visit planning committee, UC Berkeley	2016 - 2017
Lead organizer, UC Berkeley Astronomy Department Public Liaisons	2015 - 2017
Graduate student mentor, Graduate-Undergraduate Mentoring Program, UC Berkeley	2016 - present

Outreach

Astro Circle speaker, BASIS Independent Silicon Valley High School, San Jose, CA	March 2022
<i>Tons of Fuel But No Fire</i> , UC Berkeley Grad Slam, Berkeley CA	Feb 2020
Lunch speaker, Berkeley High School STEMinist Club, Berkeley CA	Feb 2020
<i>Galaxies Across Cosmic Time</i> , Public Lecture at Astro Night, Berkeley CA	2019
<i>What’s it like being an astronomer?</i> , MetWest High School, Oakland CA	2019
<i>Galaxies Across Time</i> , Public Talk at Grounds for Science, Emeryville CA	2018
Head Expert, Branson School 9th Grade Science Symposium, Ross CA	2018
Berkeley High School STEMinist Club Shadow Day, UC Berkeley	2016
Astronomy department exposition at Cal Day, UC Berkeley	2016, 2018, 2019
Mentoring group, Society of Women in the Physical Sciences, UC Berkeley	2015 - 2020
UC Berkeley Astronomy Department public liaison, UC Berkeley	2015 - 2018
AmeriCorps intern, CoPIRG Energy Service Corps, Boulder CO	Oct 2011 - May 2012
Carrotmob Boulder Initiative founding member, Boulder CO	Dec 2011 - May 2012

Talks & Posters

Talks & Seminars (* indicates invited)

* <i>Colloquium</i> , CU Boulder Astrophysical & Planetary Sciences Department	Nov 2022
*An In-Situ View of Galaxy Formation 2, Schloss Ringberg	July 2022
* <i>Review</i> , European Astronomical Society Annual Meeting: SS4, The Main Sequence of Star Formation	July 2022
NRAO webinar, “How to write an ALMA proposal”	Apr 2022
FLASH seminar, UC Santa Cruz Astronomy Department	Apr 2022
*SCIPP seminar, UC Santa Cruz Physics Department	Jan 2022
* <i>Colloquium</i> , Saint Mary’s University in Halifax	Sept 2021
*University of Hertfordshire Astronomy Seminar	June 2021
*CANDELS SED fitting working group meeting	Apr 2021
* <i>Colloquium</i> , University of Sussex	Apr 2021

*Caltech Tea Talk	Dec 2020
Princeton University GalRead Seminar	Nov 2020
Hernquist Group Meeting, Harvard University	Nov 2020
*UMass Amherst Galaxy Lunch Seminar	Oct 2020
University of Arizona Galaxy Group Talk	Oct 2020
*Harvard ITC Colloquium	Oct 2020
*Carnegie Observatories Lunch Talk	Oct 2020
UC Santa Cruz Cosmology-Galaxies-IGM Seminar	Sept 2020
*Galaxy Crawl, University of Arizona	July 2020
*In Situ View of Galaxy Formation 2, Schloss Ringberg (<i>canceled due to COVID-19</i>)	July 2020
*Where the Star Formation Ends, Lorentz Center Workshop (<i>canceled due to COVID-19</i>)	March 2020
*UC Davis Cosmology Seminar	March 2020
CASA/JILA Lunch Seminar, Boulder CO	Feb 2020
Galaxy Quenching and Transformation Throughout Cosmic Time, Aspen CO	Feb 2020
*The Growth of Galaxies in the Early Universe VI, Sesto IT	Jan 2020
The Art of Measuring Galaxy Physical Properties, Milano IT	Nov 2019
IAU Symposium 352: Uncovering early galaxy evolution in the ALMA and JWST era	June 2019
UC Santa Cruz Galaxy Workshop	Aug 2018
UC Berkeley Grad Student / Postdoc Seminar, <i>How to Write a Telescope Proposal</i>	Apr 2018
UC Berkeley Astronomy Lunch Talk, Berkeley CA	Aug 2017

Posters

Public Summit of the Action Collaborative on Preventing Sexual Harassment in Higher Education National Academies of Sciences, Engineering, and Medicine	Oct 2020
--	----------

Publications (21 total, 10 as first author; [ADS](#))

21. Spilker, J., **K. A. Suess**, D. J. Setton, R. Bezanson et al., Star Formation Suppression by Tidal Removal of Cold Molecular Gas from an Intermediate-redshift Massive Post-starburst Galaxy, *ApJ* 936, 1, L11, 2022. DOI: [10.3847/2041-8213/ac75ea](https://doi.org/10.3847/2041-8213/ac75ea)
20. Tacchella, S., incl. **K. A. Suess**, JWST NIRCam+NIRSpec: Interstellar medium and stellar populations of young galaxies with rising star formation and evolving gas reservoirs, *in review at ApJ*. [arXiv:2208.03281](https://arxiv.org/abs/2208.03281)
19. Nelson, E., **K. A. Suess**, R. Bezanson, S. H. Price, JWST reveals a population of ultra-red, flattened disk galaxies at $2 < z < 6$ previously missed by HST, *in review at ApJL*. [arXiv:2208.01630](https://arxiv.org/abs/2208.01630)
18. **Suess, K. A.**, J. Leja, B. D. Johnson, R. Bezanson et al., Recovering the Star Formation Histories of Recently Quenched Galaxies: The Impact of Model and Prior Choices, *ApJ* 935, 2, 146. DOI: [10.3847/1538-4357/ac82b0](https://doi.org/10.3847/1538-4357/ac82b0)
17. Labbe, I, P. van Dokkum, E. Nelson, R. Bezanson, **K. A. Suess** et al., A very early onset of massive galaxy formation, *in review at Nature*. [arXiv:2207.12446](https://arxiv.org/abs/2207.12446)
16. **Suess, K. A.**, R. Bezanson, E. J. Nelson, D. J. Setton et al., Rest-frame near-infrared sizes of galaxies at cosmic noon: objects in JWST's mirror are smaller than they appeared, *accepted to ApJL*. [arXiv:2207.10655](https://arxiv.org/abs/2207.10655)
15. Naidu, R. P., P. A. Oesch, P. van Dokkum, E. J. Nelson, **K. A. Suess** et al., Two Remarkably Luminous Galaxy Candidates at $z \approx 11 - 13$ Revealed by JWST, *in review at ApJL*. [arXiv:2207.09434](https://arxiv.org/abs/2207.09434)
14. Setton, D. J., M. Verrico, R. Bezanson, J. E. Greene, **K. A. Suess** et al., The Compact Structures of Massive $z \sim 0.7$ Post-starburst Galaxies in the SQuIGGLE Sample, *ApJ* 931, 1, 51, 2022. DOI: [10.3847/1538-4357/ac6096](https://doi.org/10.3847/1538-4357/ac6096)
13. **Suess, K. A.**, M. Kriek, R. Bezanson, J. E. Greene et al., SQuIGGLE: Studying Quenching in Intermediate- z Galaxies – Gas, Angular Momentum, and Evolution, *ApJ* 926, 1, 89, 2022. DOI: [10.3847/1538-4357/ac404a](https://doi.org/10.3847/1538-4357/ac404a)
12. R. Bezanson, J. Spilker, **K. A. Suess**, D. J. Setton et al., Now You See It, Now You Don't: Star Formation Truncation Precedes the Loss of Molecular Gas by 100 Myr in Massive Poststarburst Galaxies at $z \sim 0.6$, *ApJ* 925, 2, 153, 2022. DOI: [10.3847/1538-4357/ac3dfa](https://doi.org/10.3847/1538-4357/ac3dfa)
11. **Suess, K. A.**, M. Kriek, G. Barro, S. H. Price, Dissecting the size-mass and Σ_1 -mass relations at $1.0 < z < 2.5$: galaxy mass profiles and color gradients as a function of spectral shape, *ApJ* 915, 2, 87, 2021. DOI: [10.3847/1538-4357/abf1e4](https://doi.org/10.3847/1538-4357/abf1e4)
10. Setton, D. J., R. Bezanson, **K. A. Suess** et al., SQuIGGLE survey: massive $z \sim 0.6$ post-starburst galaxies exhibit flat age gradients, *ApJ* 905, 79, 2020. DOI: [10.3847/1538-4357/abc265](https://doi.org/10.3847/1538-4357/abc265)
9. **Suess, K. A.**, M. Kriek, S. H. Price, G. Barro, Color gradients along the quiescent galaxy sequence: clues to quenching and structural growth, *ApJL* 899, L2, 2020. DOI: [10.3847/2041-8213/abacc9](https://doi.org/10.3847/2041-8213/abacc9)

8. J. E. Greene, D. Setton, R. Bezanson, **K. A. Suess** et al., The Role of Active Galactic Nuclei in the Quenching of Massive Galaxies in the SQUIGGLE Survey, *ApJL* 899, L9, 2020. DOI: [10.3847/2041-8213/aba534](https://doi.org/10.3847/2041-8213/aba534)
7. **Suess, K. A.**, M. Kriek, S. H. Price, G. Barro, Half-mass radii of quiescent and star-forming galaxies evolve slowly from $0 \sim z \leq 2.5$: implications for galaxy assembly histories, *ApJL* 885, L22, 2019. DOI: [10.3847/2041-8213/ab4db3](https://doi.org/10.3847/2041-8213/ab4db3)
6. **Suess, K. A.**, M. Kriek, S. H. Price, G. Barro, Half-mass radii for $\sim 7,000$ galaxies at $1.0 \leq z \leq 2.5$: most of the evolution in the mass-size relation is due to color gradients, *ApJ* 877, 103, 2019. DOI: [10.3847/1538-4357/ab1bda](https://doi.org/10.3847/1538-4357/ab1bda)
5. Kriek, M., S. H. Price, C. Conroy, **K. A. Suess**, et al., Stellar Metallicities and Elemental Abundance Ratios of $z \sim 1.4$ Massive Quiescent Galaxies, *ApJL* 880, L31, 2019. DOI: [10.3847/2041-8213/ab2e75](https://doi.org/10.3847/2041-8213/ab2e75)
4. Hunt, Q., R. Bezanson, J. E. Greene, J. S. Spilker, **K. A. Suess**, et al., Stellar and Molecular Gas Rotation in a Recently-Quenched Massive Galaxy at $z \sim 0.7$, *ApJL* 860, L18, 2018. DOI: [10.3847/2041-8213/aaca9a](https://doi.org/10.3847/2041-8213/aaca9a)
3. **Suess, K. A.**, R. Bezanson, J. S. Spilker, M. Kriek, J. E. Greene, R. Feldmann, Q. Hunt, D. Narayanan, Massive Quenched Galaxies at $z \sim 0.7$ Retain Large Molecular Gas Reservoirs, *ApJL* 846, L14, 2017. DOI: [10.3847/2041-8213/aa85dc](https://doi.org/10.3847/2041-8213/aa85dc)
2. **Suess, K. A.**, J. Darling, M. P. Haynes, R. Giovanelli, Identifying OH Imposters in the ALFALFA Neutral Hydrogen Survey, *MNRAS* 459, 220-231, 2016. DOI: [10.1093/mnras/stw666](https://doi.org/10.1093/mnras/stw666)
1. **Suess, K. A.**, M. Snow, R. Viereck, J. Machol, Solar Spectral Proxy Irradiance from GOES (SSPRING): A Model for Solar EUV Irradiance, *J. Space Weather Space Clim.*, 6, A10, 11pp, 2016. DOI: [10.1051/swsc/2016003](https://doi.org/10.1051/swsc/2016003)

Grants

ALMA Ambassador Research Award (\$10,000)	2022
NRAO Student Observing Support Award (\$10,000)	2020
Travel Grant, Aspen Center for Physics	Feb 2020
UC Berkeley Graduate Division Travel Grant	Summer 2019, Fall 2019
IAU Travel Grant	2019
AAS International Travel Grant	2019-1, 2019-2, 2020-1
STScI grant to support <i>HST</i> program GO 15436 (\$22,000)	2017
NRAO Student Observing Support Award (\$32,000)	2017
NSF Graduate Research Fellowship (3 years stipend & tuition)	2016
UC Berkeley Chancellor's Fellowship (2 years stipend & tuition)	2015
Professional and Academic Conference Endowment, CU Boulder	2014
Individual Grant, Undergraduate Research Opportunities Program, CU Boulder	2014
Research Assistantship, Undergraduate Research Opportunities Program, CU Boulder	2012

Skills

Computing	Python, \LaTeX , Mathematica, bash, git
Other Software	Prospector, FSPS, GALFIT, SExtractor, FAST, MESA