

# PATRICK KAMIENESKI

## Exploration Postdoctoral Fellow

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## EDUCATION

- 09/2015–  
02/2023 **Ph.D. Astronomy**  
**University of Massachusetts**, Amherst, MA, USA  
Thesis: *Dissecting the Most Extreme Starburst Events in the Universe With Gravitational Lensing*  
Advisor: Dr. Min Yun.
- 09/2011–  
05/2015 **B.A. Physics, Mathematics, cum laude**,  
**Bowdoin College**, Brunswick, ME, USA  
Minor: French.

## EMPLOYMENT

- 10/2022–  
present **School of Earth and Space Exploration Postdoctoral Fellow**, Arizona State University, Tempe, AZ, USA.
- 09/2015–  
09/2022 **Graduate Research Assistant and Teaching Assistant**, University of Massachusetts Amherst.
- 2014 **Undergraduate Research Assistant (NSF-REU)**, MIT Haystack Observatory, Westford, MA, USA.
- 2012-2015 **Undergraduate Teaching Assistant**, Department of Mathematics, Bowdoin College.

## PUBLICATIONS

- 2023 **X-ray detection of the most extreme star-forming galaxies at the cosmic noon via strong lensing**, submitted to journal [ADS pending].  
Q. Daniel Wang, C. Garcia Diaz, **P. S. Kamieneski**, K. C. Harrington, M. S. Yun, N. Foo, B. L. Frye, E. F. Jimenez-Andrade, D. Liu, J. D. Lowenthal, B. A. Pampliega, M. Pascale, A. Vishwas
- 2023 **PEARLS: A Potentially Isolated Quiescent Dwarf Galaxy with a TRGB Distance of 31 Mpc**, submitted to journal [ADS].  
Timothy Carleton, T. Ellsworth-Bowers, R. Windhorst, S. Cohen, C. Conselice, J. Diego, A. Zitrin, H. Archer, I. McIntyre, **P. Kamieneski**, S. Willner, R. Jansen, J. Summers, J. D'Silva, A. Koekemoer, et al.
- 2023 **The JWST Discovery of the Triply-imaged Type Ia "Supernova H0pe" and Observations of the Galaxy Cluster PLCK G165.7+67.0**, submitted to journal [ADS].  
Brenda Frye, M. Pascale, J. Pierel, W. Chen, N. Foo, R. Leimbach, N. Garuda, S. Cohen, **P. Kamieneski**, R. Windhorst, A. Koekemoer, P. Kelly, J. Summers, M. Engesser, D. Liu; et al.
- 2023 **Sub-halos v. Halos: Which Better Reproduces the Statistics of Lensed Submillimeter Galaxies?**, submitted to journal [ADS pending].  
Anthony Englert, **P. Kamieneski**, M. Yun
- 2023 **Magellanic System Stars Identified in the SMACS J0723.3-7327 JWST ERO Images**, in press, *ApJ* [ADS].  
Jake Summers, R. Windhorst, S. Cohen, R. Jansen, T. Carleton, **P. Kamieneski**, B. Holwerda, C. Conselice, N. Adams, B. Frye, J. Diego, C. Willmer, R. Ortiz, C. Cheng, A. Pigarelli, et al.
- 2023 **Where are the Eddington-limited starbursts? Gravitational lensing provides a way forward for sub-kiloparsec views of star formation**, *Proceedings of the IAU*, in press [ADS pending].  
**P. Kamieneski**, M. Yun, J. Lowenthal, K. Harrington

- 2023 **Hidden giants in JWST's PEARLS: An ultra-massive  $z = 4.26$  sub-millimeter galaxy that is invisible to HST**, *in press, ApJ* [ADS].  
Smail, Ian; Dudzeviciute, Ugne; Gurwell, Mark; et al.
- 09/2023 **Are JWST/NIRCam color gradients in a lensed  $z = 2.3$  dusty star-forming galaxy due to central dust attenuation or inside-out galaxy growth?**, *ApJ*, 955, 91 [ADS].  
P. Kamieneski, B. Frye, M. Pascale, S. Cohen, R. Windhorst, R. Jansen, C. Cheng, H. Yan, J. Summers, T. Carleton, M. Yun, K. Harrington, N. Foo, J. Diego, C. Conselice; et al.
- 2023 **PASSAGES: the wide-ranging, extreme intrinsic properties of *Planck*-selected, lensed dusty star-forming galaxies**, *in press, ApJ* [ADS].  
P. Kamieneski, M. Yun, K. Harrington, J. Lowenthal, Q. D. Wang, B. Frye, E. Jiménez-Andrade, A. Vishwas, O. Cooper, M. Pascale, N. Foo, D. Berman, A. Englert, C. Garcia Diaz
- 08/2023 **PEARLS: Low Stellar Density Galaxies in the El Gordo Cluster Observed with JWST**, *ApJ*, 953, 83 [ADS].  
Timothy Carleton, S. Cohen, B. Frye, A. Pigarelli, J. Zhang, R. Windhorst, J. Diego, C. Conselice, C. Cheng, S. Driver, N. Foo, R. Bhatawdekar, P. Kamieneski, R. Jansen, H. Yan, et al.
- 07/2023 **Paper 1: The JWST PEARLS View of the El Gordo Galaxy Cluster and of the Structure It Magnifies**, *ApJ*, 952, 81 [ADS].  
Brenda Frye, M. Pascale, N. Foo, R. Leimbach, N. Garuda, P. Soto Robles, J. Summers, C. Diaz, P. Kamieneski, L. Furtak, S. Cohen, J. Diego, B. Beauchesne, R. Windhorst, S. Willner, et al.
- 07/2023 **ALMA Reveals a Stable Rotating Gas Disk in a Paradoxical Low-mass, Ultradusty Galaxy at  $z = 4.274$** , *ApJL*, 951, L46 [ADS].  
Alexandra Pope, J. McKinney, P. Kamieneski, A. Battisti, I. Aretxaga, G. Brammer, J. M. Diego, E. Keller, D. Marchesini, A. Mizener, A. Montana, E. Murphy, K. Whitaker, G. Wilson, M. Yun
- 07/2023 **Spectroscopy of the Supernova H0pe Host Galaxy at Redshift 1.78**, *A&A Letters*, 675, L4 [ADS].  
Mari Polletta; M. Nonino, B. Frye, A. Gargiulo, S. Bisogni, N. Garuda, D. Thompson, M. Lehnert, M. Pascale, S. Willner, P. Kamieneski, R. Leimbach, C. Cheng, D. Coe, S. Cohen, et al.
- 04/2023 **JWST's PEARLS: A new lens model for ACT-CL J0102-4915, "El Gordo," and the first red supergiant star at cosmological distances discovered by JWST**, *A&A*, 672, A3 [ADS].  
Diego, Jose M.; Meena, A. K.; Adams, N. J.; et al.
- 01/2023 **JWST's PEARLS: A JWST/NIRCam view of ALMA sources**, *ApJL*, 942, L19 [ADS].  
Cheng, Cheng; Huang, Jia-Sheng; Smail, Ian; et al.
- 01/2023 **JWST PEARLS: Prime Extragalactic Areas for Reionization and Lensing Science: Project Overview and First Results**, *AJ*, 165, 13 [ADS].  
Windhorst, Rogier A.; Cohen, S. H.; Jansen, R. A.; et al.
- 10/2022 **Unscrambling the lensed galaxies in JWST images behind SMACS0723**, *ApJL*, 938, L6 [ADS].  
Pascale, Massimo; Frye, B. L.; Diego, J.; Furtak, L. J.; Zitrin, A.; Broadhurst, T.; Conselice, C.; Dai, L.; Ferreira, L.; Adams, N. J.; Kamieneski, P.; Foo, N.; Kelly, P.; Chen, W.; Lim, J.; Meena, A. K.; Wilkins, S. M.; Bhatawdekar, R.; Windhorst, R. A.
- 09/2022 **PASSAGES: The Large Millimeter Telescope and ALMA Observations of Extremely Luminous High Redshift Galaxies Identified by the *Planck***, *MNRAS*, 515, 3911 [ADS].  
Berman, Derek A.; Yun, Min S.; Harrington, K. C.; Kamieneski, P.; Lowenthal, J.; Frye, B. L.; Wang, Q. D.; Wilson, G. W.; Aretxaga, I.; Chavez, M.; Cybulski, R.; De la Luz, V.; Erickson, N.; Ferrusca, D.; Hughes, D. H.; et al.
- 06/2022 **Possible Ongoing Merger Discovered by Photometry and Spectroscopy in the Field of the Galaxy Cluster PLCK G165.7+67.0**, *ApJ*, 932, 85 [ADS].  
Pascale, Massimo; Frye, B.; Dai, L.; et al.
- 02/2021 **Turbulent Gas in Lensed *Planck*-selected Starbursts at  $z \sim 1 - 3.5$** , *ApJ*, 908, 95 [ADS].  
Harrington, Kevin C.; Weiss, A.; Yun, M. S.; et al.
- 10/2019 **CHANG-ES XV: Large-scale magnetic field reversals in the radio halo of NGC 4631**, *A&A*, 632, A11 [ADS].  
Mora-Partiarroyo, Silvia Carolina; Krause, M.; Basu, A.; Beck, R.; Wiegert, T.; Irwin, J.; Henriksen, R.; Stein, Y.; Vargas, C.; Heesen, V.; Walterbos, R.; Rand, R.; Heald, G.; Li, J.; Kamieneski, P.; English, J.

- 10/2019 **CHANG-ES XIV: Cosmic-ray propagation and magnetic field strengths in the radio halo of NGC 4631**, *A&A*, 632, A10 [ADS].  
Mora-Partiarroyo, Silvia Carolina; Krause, M.; Basu, A.; Beck, R.; Wiegert, T.; Irwin, J.; Henriksen, R.; Stein, Y.; Vargas, C.; Heesen, V.; Walterbos, R.; Rand, R.; Heald, G.; Li, J.; **Kamieneski, P.**; English, J.
- 09/2019 **The 'Red Radio Ring': ionized and molecular gas in a starburst/active galactic nucleus at  $z \sim 2.55$** , *MNRAS*, 488, 1489 [ADS].  
Harrington, K. C.; Vishwas, A.; Weiß, A.; Magnelli, B.; Grassitelli, L.; Zajaček, M.; Jiménez-Andrade, E. F.; Leung, T. K. D.; Bertoldi, F.; Romano-Díaz, E.; Frayer, D. T.; **Kamieneski, P.**; Riechers, D.; Stacey, G. J.; Yun, M. S.; Wang, Q. D.
- 08/2018 **The gravitationally unstable gas disk of a starburst galaxy 12 billion years ago**, *Nature*, 560, 613 [ADS].  
Tadaki, K.; Iono, D.; Yun, M. S.; et al.
- 01/2017 **CHANG-ES VIII. Uncovering hidden AGN activity in radio polarization**, *MNRAS*, 464, 1333 [ADS].  
Irwin, J. A.; Schmidt, P.; Damas-Segovia, A.; Beck, R.; English, J.; Heald, G.; Henriksen, R. N.; Krause, M.; Li, J.-T.; Rand, R. J.; Wang, Q. D.; Wiegert, T.; **Kamieneski, P.**; Paré, D.; Sullivan, K.

## OBSERVATIONAL PROGRAMS (AS PI)

- 2022 **Atacama Large Millimeter/submillimeter Array (ALMA)**, 2022.1.01311.S, Cycle 9 (PI: P. Kamieneski).  
*Star Formation Beyond the Eddington Limit? 100pc-scale Dust Continuum Imaging in Strongly-lensed Dusty Starbursts*  
Time awarded: 15.5 hrs
- 2021 **Atacama Large Millimeter/submillimeter Array (ALMA)**, 2021.1.00499.S, Cycle 8 (PI: P. Kamieneski).  
*Probing Gas, Dust, Stars, and Star Formation Activity down to 100-pc Scales using Strong Gravitational Lensing*  
Time awarded: 18.3 hrs
- 2019 **Atacama Large Millimeter/submillimeter Array (ALMA)**, 2019.1.01197.S, Cycle 7 (PI: P. Kamieneski).  
*Probing Gas, Dust, Stars, and Star Formation Activity down to 100-pc Scales using Strong Gravitational Lensing*  
Time awarded: 7.4 hrs
- 2018 **Large Millimeter Telescope (LMT)**, 2018-S1-MU-7 (PI: P. Kamieneski).  
*AzTEC Photometric Imaging of Planck-selected Dusty Star-Forming Galaxies*  
Time awarded: 1.5 hrs, *not observed*
- 2018 **Karl G. Jansky Very Large Array (JVLA)**, 18A-399 (PI: P. Kamieneski).  
*VLA Study of Hyperluminous SMGs Identified from Planck All-Sky Survey*  
Time awarded: 39 hrs

## AWARDS, GRANTS & FELLOWSHIPS

- 2023 **Robert L. Brown Outstanding Doctoral Dissertation Award**.  
Award given each year to a recent recipient of a doctoral degree that is substantially based on observational data obtained at an NRAO/AUI-operated facility
- 2022 **AAS Rodger Doxsey Travel Prize, \$780**.  
Travel prize to present dissertation talk at AAS Meeting 239 (canceled due to COVID-19, deferred to AAS 240)
- 2020-2022 **NRAO Student Observing Support, \$27,790**.  
In support of ALMA program 2019.1.01197.S (PI: P. Kamieneski)
- 2022 **Mary Dailey Irvine Graduate Travel Award, 5 awards, total \$4130**.  
2022: AAS Meeting 239 (canceled due to COVID-19, deferred to AAS 240), \$1000  
2018: EWASS Meeting 2018, \$800  
2017: CHANG-ES Meeting 2017, \$600  
2017: AAS Meeting 229, \$630  
2016: 15th Synthesis Imaging Workshop, \$1100
- 2019 **AAS/NSF International Travel Grant, 3 awards, \$2659 total**.  
2019: "Views on the Interstellar Medium in Galaxies in the ALMA Era" Conference 2019, \$608  
2018: "The Universe as a Telescope" Conference 2018, \$1426  
2018: EWASS Meeting 2018, \$625
- 2016 & 2017 **Massachusetts Space Grant Consortium Summer Fellowship, \$11,000 total**.

## SELECTED CO-I OBSERVATIONAL PROGRAMS

- 2023 **ALMA**, 2023.1.00299.S (PI: N. Foo).  
*Resolved Multi-J CO/[CI] study of a strongly lensed, Planck-selected  $z = 2.66$  dusty protocluster of at least 9 DSFGs*  
Time awarded: 57 hrs
- 2023 **ALMA**, 2023.1.00251.S (PI: B. Alcalde Pampliega).  
*Unveiling a hidden gem: an extraordinarily bright strongly lensed galaxy behind Milky Way dust clouds*
- 2023 **HST**, GO-17439 (PI: A. Noble).  
*Skeletons in the Cluster: Unveiling the Stellar Mass Backbone of  $z = 1.6$  Galaxies*
- 2023 **James Webb Space Telescope (JWST)**, DD 4446 (PI: B. Frye).  
*SN H0pe: Independent Measurement of  $H_0$  by the Time Delay of a Multiply-imaged Supernova*
- 2022 **XMM-Newton**, AO-22-092283 (PI: C. Garcia Diaz).  
*Understanding the role of AGN in HyLIRGs: study of a strongly lensed sample*
- 2022 **European Southern Observatory Very Large Telescope (ESO VLT)/Enhanced Resolution Imaging Spectrograph (ERIS)**, SV 110.258S (PI: D. Liu).  
*Dissecting the Most Massive Strongly Lensed SFGs (Pilot)*
- 2022 **Gemini-South**, GN-2022B-FT-107 (PI: C. Garcia Diaz).  
*Spectroscopic determination of the relationship between a luminous X-ray AGN and a strongly lensed HyLIRG at  $z = 3.55$*
- 2022 **ALMA**, 2022.1.01282.S (PI: K. Harrington).  
*ACA mosaic search for dusty sources in and around the critical curves of Planck-selected strong lensing clusters*  
Time awarded: 138 hrs
- 2022 **Gemini-South**, GN-2022A-FT-209 (PI: O. Cooper).  
*Spectroscopic determination of the relationship between a luminous X-ray AGN and a strongly lensed HyLIRG at  $z = 3.55$*
- 2021 **XMM-Newton**, AO-21-090266 (PI: B. Frye).  
*Observations of the JWST/GTO Binary Cluster PLCK G165.7+67.0*
- 2021 **ALMA**, 2021.1.00447.S (PI: M. Yun).  
*The Origin of [C II] and [N II] Emission in High- $z$  Dusty Starbursts (Cycle8)*
- 2021 **ALMA**, 2021.2.00888.S (PI: K. Harrington).  
*ACA B7 and B8 Mosaic of a Planck-selected cluster-lensed dusty protocluster at  $z = 2.7$*
- 2021 **ALMA**, 2021.1.00353.S (PI: K. Harrington).  
*Probing gas excitation variations in lensed starbursts at cosmic noon via sub-kpc imaging of [CI] and the CO ladder*
- 2021 **ALMA**, 2021.1.00272.S (PI: A. Pope).  
*Small but mighty: Reconciling a paradoxical low-mass, ultra-dusty galaxy at  $z = 4.27$*
- 2021 **Gemini-South**, GS-2021B-FT-102 (PI: O. Cooper).  
*Comprehensive Lens Characterization for a Hyperluminous DSFG at  $z = 2$*
- 2020 **XMM-Newton**, AO-20-088272 (PI: Q. D. Wang).  
*X-raying hyperluminous sub-millimeter galaxies via strong gravitational lenses*  
Time awarded: 544 ksec (Large Program)
- 2020 **Submillimeter Array (SMA)**, 2020A-S014 (PI: K. Harrington).  
*Rest-frame 775 - 1730 GHz ISM Diagnostics of the Most IR Luminous, Lensed Planck Starburst at  $z = 3$*
- 2019 **ALMA**, 2019.1.01636.S (PI: M. Yun).  
*The Origin of [C II] and [N II] Emission in High- $z$  Dusty Starbursts*
- 2018 **JVLA**, 18B-275 (PI: K. Harrington).  
*Resolved Imaging of Cold Gas Reservoirs in Strongly Lensed Planck Galaxies*  
Time awarded: 134 hrs
- 2018 **Institut de radioastronomie millimétrique (IRAM) 30m Telescope**, 201-18 (PI: K. Harrington).  
*Dense Gas in Strongly Lensed High- $z$  Starbursts Selected by Planck: A continuation*  
Time awarded: 62 hrs
- 2018 **APEX**, 0101.F-9503(A) (PI: K. Harrington).  
*Probing the Dense Star-forming ISM of Lensed  $z \sim 2 - 3$  HyLIRGS via low- $J$   $H_2O$  and High- $J$  CO Emission Lines*  
Time awarded: 95 hrs

- 2018 **Gemini-South**, GS-2018B-Q-123 (PI: J. Lowenthal).  
*Gravitational Lens Models for the Brightest Planck SMGs at  $1 < z < 4$*
- 2018 **Large Millimeter Telescope (LMT)**, 2018-S1-MU-78 (PI: M. Yun).  
*LMT Study of Extremely Luminous Galaxies Identified using Planck and WISE*
- 2018 **Gemini-South**, GS-2018A-Q-216 (PI: J. Lowenthal).  
*Gravitational Lens Models for the Brightest Planck SMGs at  $1 < z < 4$*
- 2018 **Institut de radioastronomie millimétrique (IRAM) 30m Telescope**, 170-17 (PI: K. Harrington).  
*Probing Physical Diagnostics of SF via CO SLEDs Out to the Highest-J Transitions in Strongly Lensed  $z > 1$  HyLIRGs*  
Time awarded: 86 hrs
- 2017 **ALMA**, 2017.1.01214.5 (PI: M. Yun).  
*ALMA Study of the Hyperluminous SMGs Identified from Planck All-Sky Survey*
- 2017 **Green Bank Telescope**, 17B-305 (PI: K. Harrington).  
*CO(1-0) Probe of SF Supply for the Brightest Planck-LMT, High- $z$  Galaxies*
- 2016 **SMA**, 2016B-S062 (PI: M. Yun).  
*Probing Dense Gas Powering SF/AGN Activities in High- $z$  SMGs using Lensing*

## INVITED TALKS

- 09/2023 **Arizona State University, School of Earth and Space Exploration**, Tempe, AZ.  
Invited Colloquium: *Monster Galaxies in the Early Universe, and How Gravitational Lensing Reveals Their Secrets*
- 03/2023 **National Radio Astronomy Observatory / University of Virginia**, Charlottesville, VA.  
Invited Colloquium: *Robert Brown Thesis Award: Dissecting Extreme Starburst Events at Cosmic Noon with Gravitational Lensing*
- 06/2022 **Parsec Institute, Université de Montréal**, Montreal, QC, Canada (virtual).  
Invited Talk: *Dissecting the Most Extreme Starburst Events in the Universe with Gravitational Lensing*
- 05/2022 **Cornell University Galaxy Lunch**, Ithaca, NY (virtual).  
Invited Talk: *Dissecting the Most Extreme Starburst Events in the Universe with Gravitational Lensing*

## CONFERENCES, MEETINGS & CONTRIBUTED TALKS

- 07/2023 **The James Webb Space Telescope Turns One: The Birth and Growth of Galaxies**, Sesto, Italy.  
Contributed Talk: *Inside-out galaxy growth or dust attenuation gradients? Examining the UV/optical/IR distribution of a lensed  $z = 2.3$  dusty starburst at sub-kpc resolution*
- 06/2023 **IAUS 381: Strong gravitational lensing in the era of Big Data**, Otranto, Italy.  
Contributed Talk: *Where are the Eddington-limited starbursts? A sub-kpc view of star formation in lensed hyperluminous dusty star-forming galaxies*
- 06/2023 **242nd American Astronomical Society (AAS) Meeting**, Albuquerque, NM.  
Contributed Talk: *JWST/NIRCam color gradients reveal signs of inside-out quenching in the lensed dusty star-forming galaxy El Anzuelo ( $z = 2.3$ ) [ADS]*
- 02/2023 **Oases in the Cosmic Desert: Understanding the Structure of the Circumgalactic Medium**, Tempe, AZ.  
Poster: *Using gravitational lensing to resolve massive rotating molecular disks around dusty starbursts at Cosmic Noon*
- 02/2023 **IAUS 377: Early Disk-Galaxy Formation From JWST to the Milky Way**, Kuala Lumpur, Malaysia.  
Poster (presented remotely): *Using Gravitational Lensing to Resolve the Rotating Molecular Disks of Dusty Starbursts at Cosmic Noon*
- 06/2022 **240th American Astronomical Society (AAS) Meeting**, Pasadena, CA.  
Dissertation Talk: *Resolving Cosmic Noon: Planck-selected extremely-luminous dusty starbursts magnified by strong gravitational lensing [ADS]*
- 09/2019 **Views on the Interstellar Medium in Galaxies in the ALMA Era**, Bologna, Italy.  
Contributed Talk: *Gas and star formation at sub-100 pc scales in lensed hyper-luminous SMGs at Cosmic Noon*
- 01/2019 **233rd American Astronomical Society (AAS) Meeting**, Seattle, WA.  
Contributed Talk: *Multi-wavelength source reconstruction of gravitationally-lensed Planck-selected sub-mm galaxies [ADS]*



- 09/2018 **The Universe as a telescope: probing the cosmos at all scales with strong lensing**, Milan, Italy.  
Contributed Talk: *Lensed Hyper-luminous SMGs Selected by Planck*
- 04/2018 **European Week of Astronomy and Space Science (EWASS)**, Liverpool, UK, Symposium: "Weak and strong-lensing techniques to unveil mysteries of the Universe".  
Contributed Talk: *Lensed Hyper-luminous SMGs Selected by Planck*
- 06/2017 **CHANG-ES Meeting 2017: The Impact of CHANG-ES**, Bochum, Germany.  
Contributed Talk: *Bayesian Methods for Measuring Faraday Rotation*
- 01/2017 **229th American Astronomical Society (AAS) Meeting**, Grapevine, TX.  
Poster: *Faraday rotation measure synthesis of UGC 10288* [ADS]
- 07/2016 **CHANG-ES Meeting 2016: Radio Halos of Galaxies**, Madison, WI.  
Contributed Talk: *Faraday Rotation Measure Synthesis of UGC 10288, NGC 4845, NGC 3044*
- 06/2016 **15th Synthesis Imaging Workshop**, Socorro, NM.  
Workshop: *JVLA/NRAO*
- 01/2015 **225th American Astronomical Society Meeting**, Seattle, WA.  
Poster: *Using JVLA Observations of SiO Masers to Probe the Extended Atmosphere of an AGB Star: W Hydrae* [ADS]

## TEACHING & MENTORING

- 01/2019–  
11/2020 **Primary Instructor of Record**, University of Massachusetts Dept. of Astronomy.  
Astronomy 100 and 101: Exploring the Universe Lab Section (Spring 2019, Fall 2019, Spring 2020, Fall 2020). *Designed course content and prepared necessary lab materials for lab sections serving ~500 students; supervised other graduate TAs in teaching the course; migrated course content to virtual format in Spring/Fall 2020 during COVID-19 pandemic.*
- 2018–2019 **Summer Pre-college Program Course Coordinator**, University of Massachusetts Dept. of Astronomy.  
*Directed an intensive two-week pre-college program covering Modern Astronomy; supervised graduate student teachers in offering traditional lectures, hands-on lab activities, observing nights, optical data reduction and analysis with Jupyter notebooks; maintained course website for students to access material.*
- 06/2021–  
05/2022 **Undergraduate Research Advisor**, Smith College Dept. of Astronomy.  
*Co-advised undergraduate student (Lilah Mercadante '22) for honor's undergraduate thesis project alongside Prof. James Lowenthal.*
- 09/2015–  
05/2021 **Lab/Lecture Teaching Assistant**, University of Massachusetts Dept. of Astronomy.  
Astronomy 100: Exploring the Universe, *9 semesters total.*
- 09/2015–  
05/2022 **Research Mentor**, University of Massachusetts Department of Astronomy.  
*Mentored 7 undergraduate students in research groups of Prof. Min Yun (Neil Shah '18, Silvana Delgado Andrade '19, Sam Clyne '19, Anthony Englert '21), Prof James Lowenthal (Lilah Mercadante '22), and Prof. Daniel Wang (Dylan Paré '17, Kendall Sullivan '18).*
- 2016–2021 **Summer Program Lecturer**, University of Massachusetts Dept. of Astronomy.  
*Modern Astronomy: Delivered lectures and introductory Python labs as part of a 2 to 3-week pre-college program.*
- 06/2013–  
08/2013 **Teaching Intern**, St. Paul's School Advanced Studies Program, Concord, NH.  
*Assisted Dr. Leslie Chamberlain in teaching an Introductory Astronomy summer course for high school seniors. Returned to give a guest lecture on gravitational lensing in July 2017.*
- 09/2012–  
05/2015 **Undergraduate Teaching Assistant and Study Group Tutor**, Department of Mathematics, Bowdoin College.

## PRESS ACTIVITIES

- 09/2023 **TV Interview**, [NASA telescope captures image of El Gordo galaxy cluster](#), Arizona PBS (KAET), Arizona Horizon.
- 08/2023 **Press Release**, [Webb Spotlights Gravitational Arcs in 'El Gordo' Galaxy Cluster](#), NASA/STScI.  
ASU News: [Webb Telescope's gravitational lens reveals distant objects behind 'El Gordo' galaxy cluster](#)  
ASU News: [Einstein connects ASU professor, Holocaust survivor](#)
- 06/2023 **Press Conference**, [Illuminating Star Formation in the Warped, Dusty Galaxy "El Anzuelo" with JWST](#), AAS 242, "Discoveries in Distant Galaxies", Albuquerque, NM.

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## OUTREACH & PROFESSIONAL SERVICE

- 2023–2024 **Colloquium Committee, Beus Center for Cosmic Foundations**, Arizona State University School of Earth and Space Exploration.
- 08/2023 **Local/Scientific Organizing Committee, 2023 SESE Symposium**, Arizona State University School of Earth and Space Exploration.
- 2021–2023 **ALMA Distributed Proposal Reviewer**, Cycles 8, 9, 10.
- 2019–2023 **Chambliss Judge**, Student Poster Competition, AAS Meetings 233, 240, & 242.
- 11/2022 **Panel Member, Earth and Space Exploration Open House**, Arizona State University School of Earth and Space Exploration.
- 2018–2022 **UMass Grad Student Senator**, University of Massachusetts Amherst.  
Academic Years 2018–2019, 2019–2020, 2020–2021, 2021–2022  
*Represented the Astronomy department as a voting member in the university-wide Graduate Student Senate. Member of GSS Elections Committee, 2021.*
- 2020–2021 **Member of Diversity, Equity, and Inclusion in Admissions & Recruitment Committee**, University of Massachusetts Amherst.  
*Grad student-led committee formed to offer suggested guidelines to promote DEI in the admissions process, including the instatement of grad student-conducted interviews in 2021.*
- 03 & 12/2018 **Meet-an-Astronomer Day**, Springfield Prep Charter School, Longmeadow, MA.  
*Visited the 1st grade students at Springfield Prep and answered their questions about astronomy and the life of an astronomer.*
- 2018 **Local Organizing Committee**, University of Massachusetts Amherst.  
*Past, Current and Future Galaxy Surveys: CANDELS Meeting and TolTEC Workshop*
- 2014–present **Member of American Astronomical Society**.

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## SELECTED TECHNICAL SKILLS

- Software Experience Python, Common Astronomy Software Applications (CASA), LENSTOOL, SExtractor, photutils, EAZY, BAGPIPES, Prospector, GALFIT, BLOBCAT, SAOImage ds9, CARTA, IRAF / PyRAF, astrodrizzle, glueviz, L<sup>A</sup>T<sub>E</sub>X, HTML, MIRIAD, Astronomical Image Processing System (AIPS), Mathematica
- Observation / Reduction Experience **Radio/submm:** ALMA, JVLA, SMA  
**Optical/near-IR:** JWST, HST
- Languages English (native), French (professional), Norwegian Bokmål (basic)