Patrick Kamieneski

University of Massachusetts • Dept. of Astronomy
LGRT-B 619E • 710 North Pleasant St. • Amherst, MA 01003
pkamieneski@umass.edu • ORCID: 0000-0001-9394-6732
Professional website: people.umass.edu/pkamieneski

Education

09/2015–present **University of Massachusetts**, Amherst, MA
Ph.D. Astronomy (*in progress, expected 2022*)
Advisor: Dr. Min Yun.

09/2011–05/2015 **Bowdoin College**, Brunswick, ME
B.A. Physics, Mathematics, *cum laude*.
Minor: French

Employment

10/2016–present **Graduate Research Assistant and Teaching Assistant**, Dr. Min Yun, University of Massachusetts Amherst.

2018–2019 **Summer Pre-college Program Course Coordinator**, University of Massachusetts.

09/2015–10/2016 **Graduate Teaching Assistant**, Dr. Daniel Wang, University of Massachusetts.

06/2014–09/2014 **Undergraduate Research Assistant (NSF-REU)**, Dr. Lynn Matthews, MIT Haystack Observatory, Westford, MA.

09/2012-05/2015 **Undergraduate Teaching Assistant**, Department of Mathematics, Bowdoin College.

Publications

2022 **Gravitational lens modeling of $z \sim 1 - 3.5$ dusty star-forming galaxies selected by *Planck***, *in final stages of preparation*.
Kamieneski, Patrick S.; Yun, M. S.; Lowenthal, J. D.; Harrington, K. C.; Wang, Q. D.; Frye, B. L.; et al.

2022 ***Hubble Space Telescope* Imaging of 23 *Planck*-selected Ultraluminous Submillimeter Galaxies at $1 < z < 3$: Ubiquitous Strong Gravitational Lensing**, *in final stages of preparation*.
Lowenthal, James D.; **Kamieneski, Patrick S.**; Yun, Min S.; Harrington, Kevin; Frye, Brenda; Terlevich, Roberto J.; Wang, Q. Daniel; Berman, Derek; Aretxaga, Itziar; Hughes, David

2022 **PASSAGES: The Large Millimeter Telescope and ALMA Observations of Extremely Luminous High Redshift Galaxies Identified by the *Planck***, *accepted for publication in MNRAS* [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.; Montaña, A.; Narayanan, G.; Sánchez-Argüelles, D.; Schloerb, F. P.; Souccar, K.; Terlevich, E.; Terlevich R.; Zavala, J. A.

2022 **Possible Ongoing Merger Discovered by Photometry and Spectroscopy in the Field of the Galaxy Cluster PLCK G165.7+67.0**, *accepted for publication in ApJ* [ADS].
Pascale, Massimo; Frye, B.; Dai, L.; Foo, N.; Qin, Y.; Leimbach, R.; Bauer, A.; Merlin, E.; Coe, D.; Diego, J.; Yan, H.; Zitrin, A.; Cohen, S.; Conselice, C.; Dole, H.; Harrington, K.; Jansen, R.; **Kamieneski, P.**; Windhorst, R.A.; Yun, M.

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.; Magnelli, B.; Sharon, C. E.; Leung, T. K. D.; Vishwas, A.; Wang, Q. D.; Frayer, D. T.; Jiménez-Andrade, E. F.; Liu, D.; García, P.; Romano-Díaz, E.; Frye, B. L.; Jarugula, S.; Bădescu, T.; Berman, D.; Dannerbauer, H.; Díaz-Sánchez, T.; Grassitelli, L.; **Kamieneski, P.**; Kim, W. J.; Kirkpatrick, A.; Lowenthal, J. D.; Messias, H.; Puschnig, J.; Stacey, G. J.; Torne, P.; Bertoldi, F.

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.; Aretxaga, I.; Hatsukade, B.; Hughes, D. H.; Ikarashi, S.; Izumi, T.; Kawabe, R.; Kohno, K.; Lee, M.; Matsuda, Y.; Nakanishi, K.; Saito, T.; Tamura, Y.; Ueda, J.; Umehata, H.; Wilson, G. W.; Michiyama, T.; Ando, M.; **Kamieneski, P.**

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 (PI)

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, *never 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

Observational Programs (Co-I)

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 $z = 3.55$
Time awarded: 3.8 hrs

2021 **XMM-Newton**, *AO-21-090266* (PI: B. Frye).
Observations of the JWST/GTO Binary Cluster PLCK G165.7+67.0
Time awarded: 49 ksec

2021 **ALMA**, *2021.1.00447.S* (PI: M. Yun).
The Origin of [C II] and [N II] Emission in High-z *Dusty Starbursts (Cycle8)*
Time awarded: 10.6 hrs

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
Time awarded: 17.0 hrs

2021 **ALMA**, *2021.1.00272.S* (PI: A. Pope).
Small but mighty: Reconciling a paradoxical low-mass, ultra-dusty galaxy at $z = 4.27$
Time awarded: 16.7 hrs

2021 **Gemini-South**, *GS-2021B-FT-102* (PI: O. Cooper).
Comprehensive Lens Characterization for a Hyperluminous DSFG at $z = 2$
Time awarded: 1.3 hrs

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 $z = 3$
Time awarded: 29 hrs

2019 **ALMA**, *2019.1.01636.S* (PI: M. Yun).
The Origin of [C II] and [N II] Emission in High-z Dusty Starbursts
Time awarded: 22.7 hrs

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: 61.5 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 $1 < z < 4$
Time awarded: 18.4 hrs

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 $1 < z < 4$
Time awarded: 10.5 hrs

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.S* (PI: M. Yun).
ALMA Study of the Hyperluminous SMGs Identified from Planck All-Sky Survey
Time awarded: 22 hrs

2017 **Green Bank Telescope**, *17B-305* (PI: K. Harrington).
CO(1-0) Probe of SF Supply for the Brightest Planck-LMT, High-z Galaxies
Time awarded: 41.3 hrs

2016 **SMA**, *2016B-S062* (PI: M. Yun).
Probing Dense Gas Powering SF/AGN Activities in High-z SMGs using Lensing
Time awarded: 18 hrs

Grants & Fellowships

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)

2022 **Mary Dailey Irvine Graduate Travel Award**, *$1000*.
AAS Meeting 239 (canceled due to COVID-19, deferred to AAS 240)

2020-2021 **NRAO Student Observing Support**, *$27,790*.
In support of ALMA program 2019.1.01197.S (PI: P. Kamieneski)

06/2020-08/2020 **UMass Graduate School Fellowship**, *$9500*.

2019 **AAS/NSF International Travel Grant**, *$608*.
"Views on the Interstellar Medium in Galaxies in the ALMA Era" Conference 2019

2018 **AAS/NSF International Travel Grant**, *$1426*.
"The Universe as a Telescope" Conference 2018

2018 **AAS/NSF International Travel Grant**, *$625*.
EWASS Meeting 2018

2018 **Mary Dailey Irvine Graduate Travel Award**, *$800*.
EWASS Meeting 2018

06/2017-08/2017 **Massachusetts Space Grant Consortium Fellowship**, *$5500*.

2017 **Mary Dailey Irvine Graduate Travel Award**, *$600*.
CHANG-ES Meeting 2017

2017 **Mary Dailey Irvine Graduate Travel Award**, *$630*.
AAS Meeting 229

06/2016-08/2016 **Massachusetts Space Grant Consortium Fellowship**, *$5500*.

2016 **Mary Dailey Irvine Graduate Travel Award**, *$1100*.
15th Synthesis Imaging Workshop

Invited Talks

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

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*

01/2022 **239th American Astronomical Society (AAS) Meeting**, Salt Lake City, UT.
Dissertation Talk **(canceled due to COVID-19)**: *Planck-selected extremely-luminous dusty starbursts magnified by strong gravitational lensing*

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*

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*

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*

Teaching

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 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.

09/2015–05/2021 **Lab/Lecture Teaching Assistant**, University of Massachusetts Dept. of Astronomy.
Astronomy 100: Exploring the Universe, *9 semesters total.*

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.

Mentoring, Outreach, & Professional Service

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.

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.

2021–2022 **ALMA Distributed Proposal Reviewer**, Cycles 8 & 9.

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.

2019 & 2022 **Volunteer Poster Judge**, Chambliss Competition, AAS Meetings 233 & 240.

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

09/2015–05/2022 **Research Mentor**, University of Massachusetts Department of Astronomy.
Mentored a total of 7 undergraduate students in Dr. Min Yun's research group (Neil Shah '18, Silvana Delgado Andrade '19, Sam Clyne '19, Anthony Englert '21, and Lilah Mercadante '22) and in Dr. Daniel Wang's research group (Dylan Paré '17 and Kendall Sullivan '18).

2014–present **Member of American Astronomical Society**.

Technical Skills

Software Experience	Python Common Astronomy Software Applications (CASA) LENSTOOL, GALFIT, SExtractor, BLOBCAT SAOImage ds9 / CARTA IRAF / PyRAF / astrodrizzle glue-viz LaTeX HTML MIRIAD / Astronomical Image Processing System (AIPS) Mathematica
Observation Prep and Data Reduction Experience	Atacama Large Millimeter/submillimeter Array (ALMA) Jansky Very Large Array (JVLA) Submillimeter Array (SMA) Hubble Space Telescope (WFC3, ACS)
Languages	English (native), French (professional)