Lau, Marie Wingyee

Personal and Contact Info

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Languages:	IDL, Python, Mathematica, English, Chinese
Citizenships:	Hong Kong SAR, Permanent Resident of United States of America

Research Interests

Dust obscured quasars, quasar feedback, quasar host galaxy feeding, circumgalactic medium

Academic Appointments and Education

University of California, Riverside, Fall 2018–present

- Postdoctoral Scholar, supervised by Prof. Fred Hamann

University of California, Santa Cruz, Winter 2018–Summer 2018

- Interim Postdoctoral Scholar, supervised by Prof. Piero Madau and Prof. Alexie Leauthaud

University of California, Santa Cruz, Fall 2012–Fall 2017

- Ph.D. in Astronomy 2017, advisor: Prof. J. Xavier Prochaska
- M.S. 2015

The Chinese University of Hong Kong, Fall 2008–Spring 2012

- B.S. Physics, with honors
- Exchange programs with University of California, Santa Barbara, and Berkeley

Grants, Honors and Awards

- Funds for Astronomical Meetings: Outreach to Underrepresented Scientists (FAMOUS) travel grant, American Astronomical Society, 2020
- Hubble Space Telescope Cycle-25, title: Observing AGN Feedback Down-the-Barrel Using Associated Absorbers at $z \lesssim 1.5$, ID: 15034, $132,631, Space Telescope Science Institute, 2017
- Graduate Student Association Travel Grant, UC Santa Cruz, 2017
- Next Generation Telescope Science Institute (NEXSI) Fellowship, UC Santa Cruz, 2012
- Regents' Fellowship, UC Santa Cruz, 2012
- Student speech representative at scholarship presentation ceremony, The Chinese University of Hong Kong, 2012
- Nine scholarships totaling the full tuition for academic excellence and international exchanges, The Chinese University of Hong Kong, 2008–2012
- Summer Undergraduate Research Fellowship, California Institute of Technology, 2011

Telescope Proposals and Observing Experience

- Co-Investigator of *Mapping the Extended Infall/Outflow Gas Around Extremely Red Quasars*, awarded 3.5 nights at Keck Observatory Keck II/KCWI
- Co-Investigator of *Extreme Quasar Feedback at the Peak of the Galaxy Formation Epoch*, awarded 7 nights at Keck Observatory Keck I/OSIRIS
- Principal Investigator of *Quasar Feeding and Feedback via Down-the-barrel Inflows*, awarded 4 nights at Lick Observatory Shane/Kast
- Principal Investigator of *A Potentially Transformative Approach to Cluster Cosmology*, awarded 22 nights at Lick Observatory Shane/Kast

- Co-Investigator of *Nature of Mid-infrared Flares in Nearby Galaxies: Tidal Disruption Events or Turn-on AGN?*, awarded 4 nights at Lick Observatory Shane/Kast
- Principal Investigator of *Late-time Optical Spectral Signatures of Tidal Disruption Candidates*, awarded 22 nights at Lick Observatory Shane/Kast
- Co-Investigator of *To Explore Emission Lines on Large Spatial Scales of Red Galaxies Hosting Intermediate-mass Black Holes*, awarded 6 nights at Lick Observatory Shane/Kast
- Co-Investigator of *The* HI *Gas of* 2175 Å *Absorbers*, awarded 20 nights at Lick Observatory Shane/Kast
- Co-Investigator of *Resolving the Small-scale Structure of the Circumgalactic Medium*, awarded 9 nights at Keck Observatory Keck I/LRIS
- Co-Investigator of *Circumgalactic Medium Studies at* $z \sim 2$ *with Close Quasar Pairs*, awarded 4 nights at Keck Observatory Keck II/ESI
- Observer at Keck Observatory Keck I/OSIRIS, served 2.5 nights; Keck II/ESI, served 4 nights; Keck II/KCWI, served 3.5 nights
- Observer at Lick Observatory Shane/Kast, served 60 nights; ShaneAO/ShARCS, served 2 nights
- Observer at Large Binocular Telescope Observatory/LUCI, served 2 nights
- Observer at Palomar Observatory 200-inch Hale/Cosmic Web Imager, served 2 nights

Seminars and Conferences

- Invited to Fundamentals of Gaseous Halos Program, Kavli Institute for Theoretical Physics, 2021
- Invited contribution at Santa Cruz Galaxy Formation Workshop, UC Santa Cruz, 2017
- Invited contribution at Inter[Stellar and Galactic] Medium Program of Studies Winter Writing Workshop, UC Santa Cruz, 2016
- Invited contribution at Intergalactic Matters, Max Planck Institute for Astronomy, 2014
- 16 contributed seminars at research institutions
- 14 contributed presentations at conferences in USA, Chile, and France

Professional Services

- Postdoc liaison/member of the Physics Organization for Womxn and the Under-represented, UC Riverside, 2018–present
- Judge for Chambliss Astronomy Achievement Student Awards of the American Astronomical Society, 2018–present
- Review panel/proposal reviewer for Hubble Space Telescope, 2017–present
- Referee for The Astrophysical Journal, and for the Monthly Notices of the Royal Astronomical Society, 2015–present
- Co-organizer of department colloquia and prospective student visits, UC Santa Cruz, 2017, 2015
- Vice-president of a sub-Society of Physics Students, The Chinese University of Hong Kong, 2009–2011
- United College Student Union sub-Committee, The Chinese University of Hong Kong, 2009–2011

Teaching, Mentoring and Outreach

- Co-mentor for a graduate thesis, UC Riverside, 2018–present
- Mentor for an undergraduate senior thesis under the STEM Diversity Program Lamat, UC Santa Cruz, 2017–2019
- Mentor for the Science Internship Program for high school students, UC Santa Cruz, 2017, 2016
- Mentor for the Siemens Competition in Math, Science & Technology, 2017, 2016
- Teaching Assistant for the California State Summer School for Mathematics and Science (COS-

MOS; led high school students on pre-scripted projects), 2017, 2016
- Teaching Assistant for ASTR/PHYS 9B: Introduction to Research in Physics and Astrophysics (organized research project groups and cooperative homework labs), UC Santa Cruz, Spring 2017
- Teaching Assistant for ASTR 2: Overview of the Universe, UC Santa Cruz, Winter 2017, Fall 2016, Spring 2016, Winter 2016, Fall 2015
- On-call for Ask-An-Astronomer (answered questions from general public), UC Santa Cruz, 2014–2016
- Teaching Assistant for ASTR 6: The Space-Age Solar System, UC Santa Cruz, Winter 2015
- Teaching Assistant for ASTR 1: Introduction to the Cosmos, UC Santa Cruz, Fall 2012
- Private tutor for high school students in English and Mathematics, 2003–2008

Research Experiences Outside of Astronomy
- Climate change sensitivity evaluation from spaceborne instrument measurements, with Prof. Y. L. Yung, at Caltech
- Determining cloud base and thickness from spaceborne imaging and lidar profiling, with Prof. Y. L. Yung, at Caltech/Jet Propulsion Laboratory
- Study on the occurence of high winds and gusts during Northeast monsoon in Hong Kong, at Hong Kong Observatory
- Mechanical vibration of thin plates (senior thesis), with Prof. Kenneth Young, The Chinese University of Hong Kong

Papers in preparation
- **Lau, M. W.**, Hamann, F., Gillette, J., Rupke, D. S. N., & Wylesalek, D., *Extended emission around the reddest "extremely red quasar" (ERQ): no signs of extreme outflows on circumgalactic scales*, to be submitted

Publications
- Fu, H., Xue, R., Prochaska, J. X., Stockton, A., Ponnada, S., **Lau, M. W.**, Cooray, A., & Narayanan, D., *A Long Stream of Metal-Poor Cool Gas Around A Massive Starburst Galaxy at z=2.67*, The Astrophysical Journal, in press
- Williams, P. R., et al. including **Lau, M. W.**, *Space Telescope and Optical Reverberation Mapping Project. XII. Broad-Line Region Modeling of NGC 5548*, The Astrophysical Journal, Volume 902, Issue 1, article id. 74 (2020)
- Horne, K., et al. including **Lau, M. W.**, *Space Telescope and Optical Reverberation Mapping Project. IX. Velocity-Delay Maps for Broad Emission Lines in NGC 5548*, The Astrophysical Journal, in press
- Kriss, G. A., et al. including **Lau, M. W.**, *Space Telescope and Optical Reverberation Mapping Project. VIII. Modeling the Ultraviolet Spectrum of the Seyfert 1 Galaxy NGC5548*, The Astrophysical Journal, Volume 881, Issue 2, article id. 153 (2019)
- Findlay, J. R., Prochaska, J. X., Hennawi, J. F., Fumagalli, M., Myers, A. D., Bartle, S., Chehade, B., DiPompeo, M. A., Shanks, T., **Lau, M. W.**, & Rubin, K. H. R., *Quasars Probing Quasars. X. The Quasar Pair Spectral Database*, The Astrophysical Journal Supplement Series, Volume 236, Issue 2, article id. 44 (2018)
- **Lau, M. W.**, Prochaska, J. X., & Hennawi, J. F., *Quasars Probing Quasars. IX. The Kinematics Of the Circumgalactic Medium Surrounding $z \sim 2$ Quasars*, The Astrophysical Journal, Volume 857, Issue 2, article id. 126 (2018)

- Boyajian, T., et al. including **Lau, M. W.**, *The First Post-Kepler Brightness Dips of KIC 8462852*, The Astrophysical Journal Letters, Volume 853, Issue 1, article id. L8 (2018)
- Bose, S., & Dong, S., et al. including **Lau, M. W.**, *Gaia17biu/SN 2017egm in NGC 3191: The Closest Hydrogen-poor Superluminous Supernova to Date Is in a "Normal", Massive, Metal-rich Spiral Galaxy*, The Astrophysical Journal, Volume 853, Issue 1, article id. 57 (2018)
- Mathur, S., et al. including **Lau, M. W.**, *Space Telescope and Optical Reverberation Mapping Project. VII. Understanding the UV Anomaly in NGC 5548 with X-Ray Spectroscopy*, The Astrophysical Journal, Volume 846, Issue 1, article id. 55 (2017)
- Prochaska, J. X., **Lau, M. W.**, & Hennawi, J. F., *VizieR Online Data Catalog: Circumgalactic medium surrounding z∼2 quasars (Prochaska+, 2014)*, VizieR On-line Data Catalog: J/ApJ/796/140. (2017)
- Pei, L., et al. including **Lau, M. W.**, *Space Telescope and Optical Reverberation Mapping Project. V. Optical Spectroscopic campaign and Emission-line Analysis for NGC 5548*, The Astrophysical Journal, Volume 837, Issue 2, article id. 131 (2017)
- **Lau, M. W.**, Prochaska, J. X., & Hennawi, J. F., *Quasars Probing Quasars. VIII. The Physical Properties of the Cool Circumgalactic Medium Surrounding $z \sim 2$–3 Massive Galaxies Hosting Quasars*, The Astrophysical Journal Supplement Series, Volume 226, Issue 2, article id. 25 (2016)
- Cai, Z., Fan, X., Peirani, S., Bian, F., Frye, B., McGreer, I., Prochaska, J. X., **Lau, M. W.**, Tejos, N., Ho, S., & Schneider, D. P., *MApping the Most Massive Overdensities Through Hydrogen (MAMMOTH) I: Methodology*, The Astrophysical Journal, Volume 833, Issue 2, article id. 135 (2016)
- Rubin, K. H. R., Hennawi, J. F., Prochaska, J. X., Simcoe, R. A., Myers, A., & **Lau, M. W.**, *Dissecting the Gaseous Halos of $z \sim 2$ Damped Lyα Systems with Close Quasar Pairs*, The Astrophysical Journal, Volume 808, Issue 1, article id. 38 (2015)
- Prochaska, J. X., **Lau, M. W.**, & Hennawi, J. F., *Quasars Probing Quasars. VII. The Pinnacle of the Cool Circumgalactic medium Surrounds Massive $z \sim 2$ Galaxies*, The Astrophysical Journal, Volume 796, Issue 2, article id. 140 (2014)
- Prochaska, J. X., Hennawi, J. F., Lee, K.-G., Cantalupo, S., Bovy, J., Djorgovski, S. G., Ellison, S. L., **Lau, M. W.**, Martin, C. L., Myers, A., Rubin, K. H. R., & Simcoe, R. A., *Quasars Probing Quasars. VI. Excess HI Absorption within One Proper Mpc of $z \sim 2$ Quasars*, The Astrophysical Journal, Volume 776, Issue 2, article id. 136 (2013)
- Jiang, Y., Aumann, H. H, **Lau, M. W.**, & Yung Y. L., *Climate Change Sensitivity Evaluation from AIRS and IRIS measurements*, Proceedings of the SPIE, Volume 8153, id. 81531Z (2011)