Marie Wingyee Lau

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	Address:	Dept of Astronomy, University of California, Santa Cruz, CA 95064
	Homepage:	http://lwymarie.github.io
	Languages:	IDL, Python, Mathematica, English, Chinese
	Citizenship:	Hong Kong SAR

Research Interests

Circumgalactic medium, quasars, active galactic nuclei, galaxy formation, supermassive black holes, tidal disruption events, stellar archeology, chemical abundances, quasar absorption lines, optical, near-infrared, and ultraviolet spectroscopy

Education

University of California, Santa Cruz, 2012 - Present

- Ph.D. Astronomy in progress
- Thesis advisor: Prof. J. Xavier Prochaska
- M.S. 2015

The Chinese University of Hong Kong, 2008 - 2012

- B.S. Physics, with honors

University of California, Santa Barbara, Winter - Spring 2011

- Educational Abroad Program Reciprocity

University of California, Berkeley, Summer 2009

- Summer Sessions

Grants, Honors and Awards

- Hubble Space Telescope Cycle-25, title: Observing AGN Feedback Down-the-Barrel Using Associated Absorbers at $z \lesssim 1.5$, ID: 15034, Space Telescope Science Institute, 2017
- NEXSI Fellowship, UC Santa Cruz, 2012
- Regents' Fellowship, UC Santa Cruz, 2012
- Student speech representative of the United College scholarship presentation ceremony, The Chinese University of Hong Kong, 2012
- 9 scholarships totaling the full tuition, The Chinese University of Hong Kong, 2008 - 2012
- Summer Undergraduate Research Fellowship, California Institute of Technology, 2011

Telescope Proposals and Observing

- Lick Observatory Shane/Kast: *Late-time Optical Spectral Signatures of Tidal Disruption Candidates*, Principal Investigator, 6 nights in 2017A, 12 nights in 2016A, 4 nights in 2015A
- Lick Observatory Shane/Kast: *To Explore Emission Lines on Large Spatial Scales of Red Galaxies Hosting Intermediate-mass Black Holes*, co-Investigator, 6 nights in 2017A
- Lick Observatory Shane/Kast: *The HI Gas of* 2175 Å *Absorbers*, co-Investigator, 5 nights in 2015B, 5 nights in 2015A, 5 nights in 2014B, 5 nights in 2014A

- Keck Observatory Keck I/LRIS: *Resolving the Small-scale Structure of the Circumgalactic Medium*, co-Investigator, 2 nights in 2015B, 3 nights in 2015A, 2 nights in 2014B
- Keck Observatory Keck II/ESI: *Circumgalactic Medium Studies at $z \sim 2$ with Close Quasar Pairs*, co-Investigator, 2 nights in 2014B, 1 night in 2014A, 1 night in 2013B
- Lead observer of ≈ 50 nights on medium and large telescopes

PUBLICATIONS

- Bose, S., & Dong, S., et al. including **Lau, M. W**, *Gaia17biu/SN 2017egm: The Closest Hydrogen-poor Superluminous Supernova To Date is in a "Normal", Massive, Metal-rich Spiral Galaxy*, submitted to The Astrophysical Journal, arXiv:1708.00864
- **Lau, M. W.**, Prochaska, J. X., & Hennawi, J. F., *Quasars Probing Quasars. IX. The Kinematics Of the Circumgalactic Medium Surrounding $z \sim 2$ Quasars*, submitted to The Astrophysical Journal, arXiv:1705.03476
- 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)
- 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 Surroudning $z \sim 2$–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)

Work in Progress

- **Lau, M. W.**, Cheng, E., Smith, G. H., & Chen, B., *Na and O Anomalies in Globular Clusters: Internal Mixing or Primordial Origin?*
- **Lau, M. W.**, Finlator, K. M., & Oh, S. P. et al., *Hydrodynamic Simulations of Quenching of Central versus Satellite Galaxies at* $z \sim 0.1$
- **Lau, M. W.**, Dai, L., Guillochon, J., & Ramirez-Ruiz, E., *Late-time Optical Spectral Signatures of Tidal Disruption Events: PTF-09ge*

Contributed Talks

- Science Lunch Meeting, Caltech, 2017
- INPA seminar, Lawrence Berkeley National Laboratory, 2017
- Department Lunch Talk, UC Berkeley, 2017
- Keck Science Meeting, Santa Cruz, 2017
- Thirty Meter Telescope Future Leaders Workshop, UC Santa Cruz, 2017
- Santa Cruz Galaxy Formation Workshop, UC Santa Cruz, 2017
- Inter[Stellar and Galactic] Medium Program of Studies meeting, UC Santa Cruz, 2017
- Inter[Stellar and Galactic] Medium Program of Studies Winter Writing Workshop, UC Santa Cruz, 2016
- Unveiling the AGN - Galaxy Evolution Connection, Universidad de Concepción, 2015
- Santa Cruz Galaxy Formation Workshop, UC Santa Cruz, 2014
- Intergalactic Matters, Max-Planck-Institut für Astronomie, 2014
- Friday Lunchtime Astrophysics Seminar Hour, UC Santa Cruz, 2014
- GAstronomy lunch talk, UC Santa Barbara, 2011

Service

- Proposal reviewer, Hubble Space Telescope Cycle 25 Mid-cycle
- Colloquium co-organizer, UC Santa Cruz, 2017
- Referee for the Monthly Notices of the Royal Astronomical Society, 2015
- Organizer of prospective graduate student visit, UC Santa Cruz, 2015
- Vice-President and Publication of the United College Student Union Physics Society, The Chinese University of Hong Kong, 2009 - 2011
- Observer of United College Student Supervision Committee, The Chinese University of Hong Kong, 2010 - 2011

Academic Memberships

- American Astronomical Society, Junior member

Teaching, Mentoring and Outreach

- Primary Mentor for four high school interns under the Science Internship Program, UC Santa Cruz, 2017, 2016
- Teaching Assistant for California State Summer School for Mathematics and Science (COSMOS), 2017, 2016
- Teaching Assistant for ASTR/PHYS 9B: Introduction to Research in Physics and Astrophysics, 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
- Mentor for the Siemens Competition in Math, Science & Technology, project titled Surface Compositions of Red Giant Stars in Globular Clusters, 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. Yuk L. Yung, Caltech
- Determining cloud base and thickness from spaceborne spectroscopic imaging and lidar profiling techniques, with Dr Dong Wu, Goddard Space Flight Center
- Study on the occurence of high winds and severe gusts during the onset of Northeast monsoon in Hong Kong, Hong Kong Observatory
- Mechanical vibration of thin plates (senior thesis), with Prof. Kenneth Young, The Chinese University of Hong Kong

Academic References

- Prof. J. Xavier Prochaska, UCO/Lick Observatory, UC Santa Cruz, xavier@ucolick.org
- Prof. Graeme Smith, UCO/Lick Observatory, UC Santa Cruz, graeme@ucolick.org
- Prof. Joseph F. Hennawi, UC Santa Barbara, joe@physics.ucsb.edu