

# Anna Y. Q. Ho

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## EDUCATION

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Expected 2020	PhD, California Institute of Technology, Astrophysics <ul style="list-style-type: none"><li>• Thesis: <i>The Landscape of Engine-Driven Stellar Explosions</i></li><li>• Advisor: Prof. Shri Kulkarni</li></ul>
2017	M.S., California Institute of Technology, Astrophysics
2014	B.S., Massachusetts Institute of Technology, Physics

## FELLOWSHIPS AND AWARDS

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2020	Rodger Doxsey Travel Prize (Society Award)
2014-2019	National Science Foundation Graduate Research Fellowship (National Award)
2019	Affiliate, Keck Institute for Space Studies (University Award)
2017	Garmire Scholarship, Caltech (Division Award)
2014-2015	Fulbright Scholarship (National Award)
2014	Karl Taylor Compton Prize, MIT (University Award)
2014	Ida M. Green Fellowship, MIT (Departmental Award)
2014	Ford Foundation Fellowship, Honorable Mention
2014	Chambliss Astronomy Achievement Student Awards, Honorable Mention
2013	1 <sup>st</sup> Place, DeWitt Wallace Prize for Science Writing for the Public, MIT (Uni. Award)

## PUBLISHED PAPERS IN REFEREED JOURNALS

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### First Author

- [1] **Ho, A. Y. Q.**, Perley, D. A., et al. 2020, *The Koala: A Fast Blue Optical Transient with Luminous Radio Emission from a Starburst Dwarf Galaxy at  $z = 0.27$* , accepted to the Astrophysical Journal, ([arXiv:1912.10354](https://arxiv.org/abs/1912.10354))
- [2] **Ho, A. Y. Q.**, Corsi, A., et al. 2020, *The Broad-lined Ic Supernova ZTF18aaqjovh (SN 2018bvw): An Optically-discovered Engine-driven Supernova Candidate with Luminous Radio Emission*, The Astrophysical Journal, **893**, 132 ([arXiv:1912.10354](https://arxiv.org/abs/1912.10354))
- [3] **Ho, A. Y. Q.**, Goldstein, D. A., Schulze, S., et al. 2019, *Evidence for Late-stage Eruptive Mass-loss in the Progenitor to SN2018gep, a Broad-lined Ic Supernova: Pre-explosion Emission and a Rapidly Rising Luminous Transient*, The Astrophysical Journal, **887**, 169H ([arXiv:1904.11009](https://arxiv.org/abs/1904.11009))
- [4] **Ho, A. Y. Q.**, Phinney, E. S., Ravi, V., et al. 2019, *AT2018cow: a luminous millimeter transient*, The Astrophysical Journal, **871**, 73 ([arXiv:1810.10880](https://arxiv.org/abs/1810.10880))
- [5] **Ho, A. Y. Q.**, Kulkarni, S.R., Nugent, P. E. et al. 2018, *iPTF Archival Search for Fast Optical Transients*, The Astrophysical Journal Letters, **854**, 13 ([arXiv:1712.00949](https://arxiv.org/abs/1712.00949))
- [6] **Ho, A. Y. Q.**, Rix, H.-W., Ness, M. K., Hogg, D. W., et al. 2017, *Masses and Ages for 230,000 LAMOST Giants, via Their Carbon and Nitrogen Abundances*, The Astrophysical Journal, **841**, 40 ([arXiv:1609.03195](https://arxiv.org/abs/1609.03195))
- [7] **Ho, A. Y. Q.**, Ness, M. K., Hogg, D. W., et al. 2017, *Label Transfer from APOGEE to LAMOST: Precise Stellar Parameters for 450,000 LAMOST Giants*, The Astrophysical Journal, **836**, 5 ([arXiv:1602.00303](https://arxiv.org/abs/1602.00303))

## Other

- [1] Casey, A.R., **Ho, A. Y. Q.**, et al. 2019, *Tidal interactions between binary stars drives lithium production in low-mass red giants*, The Astrophysical Journal, **880**, 125 ([arXiv:1902.04102](#))
- [2] Jencson, J. E. et al. 2019, *Discovery of an Intermediate-luminosity Red Transient in M51 and Its Likely Dust-obscured, Infrared-variable Progenitor*, The Astrophysical Journal Letters, **880**, L20 ([arXiv:1904.07857](#))
- [3] Graham, M. J. et al. 2019, *The Zwicky Transient Facility: Science Objectives*, Publications of the Astronomical Society of the Pacific, **131**, 078001 ([arXiv:1902.01945](#))
- [4] Perley, D. A. et al. 2019, *The Fast, Luminous Ultraviolet Transient AT2018cow: Extreme Supernova, or Disruption of a Star by an Intermediate-Mass black Hole?*, Monthly Notices of the Royal Astronomical Society, **484**, 1031 ([arXiv:1808.00969](#))
- [5] De, K. et al. 2019, *ZTF 18aaqeasu (SN2018byg): A Massive Helium-shell Double Detonation on a Sub-Chandrasekhar-mass White Dwarf*, The Astrophysical Journal Letters, **873**, L18 ([arXiv:1901.00874](#))
- [6] Bellm, E. C. et al. 2019, *The Zwicky Transient Facility: System Overview, Performance, and First Results*, Publications of the Astronomical Society of the Pacific, **131**, 018002 ([arXiv:1902.01932](#))
- [7] Kemp, A. J., et al. 2018, *On the discovery of K-enhanced and possibly Mg-depleted stars throughout the Milky Way*, Monthly Notices of the Royal Astronomical Society, **480**, 1384 ([arXiv:1807.05693](#))
- [8] Adams, S. M. et al. 2018, *iPTF Survey for Cool Transients*, Publications of the Astronomical Society of the Pacific, **130**, 034202 ([arXiv:1711.10501](#))
- [9] Guglielmo, M., Lane, R. R., Conn, B. C., et al. 2018, *On the Origin of the Monoceros Ring - I: Kinematics, proper motions, and the nature of the progenitor*, Monthly Notices of the Royal Astronomical Society, **474**, 4584 ([arXiv:1711.06682](#))
- [10] Hallinan, G., et al. 2017, *A Radio Counterpart to a Neutron Star Merger*, Science, **358**, 1579 ([arXiv:1710.05435](#))
- [11] Kasliwal, M. M., et al. 2017, *Illuminating Gravitational Waves: A Concordant Picture of Photons from a Neutron Star Merger*, Science, **358**, 1559 ([arXiv:1710.05436](#))
- [12] Abbott, B. P., et al. 2017, *Multi-messenger Observations of a Binary Neutron Star Merger*, The Astrophysical Journal Letters, **848**, L12 ([arXiv:1710.05833](#))
- [13] Blagorodnova, N., et al. 2017, *iPTF16fnl: a faint and fast tidal disruption event in an E+A galaxy*, The Astrophysical Journal, **844**, 46 ([arXiv:1703.00965](#))
- [14] Ting, Y.-S., et al. 2017, *Measuring 14 Elemental Abundances with R = 1800 LAMOST Spectra*, The Astrophysical Journal Letters, **849**, L9 ([arXiv:1708.01758](#))
- [15] Hogg, D. W., et al. 2016, *Chemical tagging can work: Identification of stellar phase-space structures purely by chemical-abundance similarity*, The Astrophysical Journal, **833**, 262 ([arXiv:1601.05413](#))
- [16] Ness, M., et al. 2016, *Spectroscopic Determination of Masses (and Implied Ages) for Red Giants*, The Astrophysical Journal, **823**, 114 ([arXiv:1511.08204](#))
- [17] Ness, M., et al. 2015, *The Cannon: A data-driven approach to stellar label determination*, The Astrophysical Journal, **808**, 16 ([arXiv:1501.07604](#))

## SELECTED PUBLICITY

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2019	<b>Science News</b> , <i>The cosmic Cow may be a strange supernova</i>
2019	<b>The Washington Post</b> , <i>Scientists had never seen anything like this supernova</i>

2019	<b>WIRED</b> , <i>We may have finally spotted a star turning into a black hole</i>
2018	<b>Nature News</b> , <i>Holy Cow! Astronomers agog at mysterious new supernova</i>

## PROFESSIONAL SERVICE

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2019-Present	Referee/reviewer for The Astrophysical Journal
2019-Present	Graduate representative to the faculty, Astronomy Department
2017-Present	Graduate student mentor, Astronomy Department
2018	Graduate admissions committee, Astronomy Department
2018	Department representative, Graduate Student Council
2014	AAS Representative, Congressional Visits Day, Washington DC

## OBSERVING, DATA REDUCTION, PROGRAMMING EXPERIENCE

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Radio	PI of 7 successful observing proposals (5 VLA, 1 VLBA, 1 GMRT) Experienced in VLA data reduction
Millimeter	PI of 5 successful observing proposals (3 SMA, 2 ALMA) 5 nights of observing on the SMA
Optical	Designed and led observing programs on Palomar 60-inch and 200-inch, Keck (LRIS) 21 nights of observing on DBSP and LRIS Experienced in DBSP and LRIS data reduction
X-ray	Over 10 <i>Swift</i> ToO observations approved and reduced PI of a successful <i>Chandra</i> DDT proposal
Software	Python, CASA, LaTeX, Mathematica, HTML, Postgres, SQL

## TEACHING

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### University Teaching

2016	TA for Ay1 at Caltech (undergraduate course, “The Evolving Universe”) Recognized as “outstanding TA” by Caltech registrar
2015	TA for Ay122b at Caltech (graduate course, “Radio Astronomy”)
2015	TA for Ay20 at Caltech (undergraduate course, “Basic Astronomy and the Galaxy”)

### Workshops

2018	Instructor, ZTF Summer School
2016	Lead Instructor, Gemini Observatory Workshop on Data-Driven Modeling of Spectra

### K-12 Teaching

2019	2-day workshop for K-12 teachers, Huntington Library, Pasadena CA
2016	9-week class for 7-12 year olds, Institute for Educational Advancement, Pasadena CA
2010-2014	Designed and taught 12 classes for over 500 middle- and high-school students, MIT
2010	High-school teaching assistant for 1 month, Pueblo Pintado Navajo Reservation, NM

## INVITED TALKS

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2019	Keck Institute for Space Studies, Pasadena, CA <i>Telescopes, Astronomical Discoveries, and Their Influence on Literature</i>
2019	Stars and Planets Seminar, Harvard-Smithsonian CfA, Cambridge, MA <i>The Death Throes of a Stripped Massive Star</i>
2019	SMA Seminar, Harvard-Smithsonian CfA, Cambridge, MA <i>SMA Observations of AT2018cow:</i> <i>A Prototype for Millimeter Time-Domain Astronomy</i>
2019	Brown Bag Lunch, MIT, Cambridge, MA

	<i>The Death Throes of a Stripped Massive Star</i>
2019	UC Berkeley Department Lunch Talk, Berkeley, CA
	<i>The Death Throes of a Stripped Massive Star</i>
2019	Press Panel, AAS Winter Meeting, Seattle, WA
	<i>Watching The Cow Shock Its Environment: The Millimeter-Wavelength Perspective</i>
2016	Gemini Observatory, La Serena, Chile
	The Cannon: <i>Data-Driven Spectral Modeling in the Era of Large Stellar Surveys</i>

## CONTRIBUTED TALKS

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2019	Colloquium, National Central University, Taiwan
	<i>The Landscape of Engine-Driven Stellar Explosions</i>
2019	SMA Workshop, ASIAA, Taiwan
	<i>SMA Observations of AT2018cow: A New Class of Luminous Millimeter Transient</i>
2019	ZTF Collaboration Meeting, Seattle, WA
	<i>The Landscape of Engine-Driven Stellar Explosions</i>
2019	STScI Spring Symposium, Baltimore, MD
	<i>The Death Throes of a Stripped Massive Star</i>
2019	ZTF-Theory Network Meeting, KITP, Santa Barbara, CA
	<i>The Death Throes of a Stripped Massive Star</i>
2018	ZTF-Theory Network Meeting, KITP, Santa Barbara, CA
	<i>AT2018cow: A Rapid Ultraviolet Transient</i>
2017	GROWTH Annual Meeting, Milwaukee, WI
	<i>Dirty Fireballs and Orphan Afterglows:</i>
	<i>A Broader Landscape of Relativistic Explosions with ZTF</i>
2016	NRAO Lunch Seminar, Socorro, NM
	The Cannon: <i>Data-Driven Spectral Modeling in the Era of Large Stellar Surveys</i>
2015	Boutiques & Experiments Conference, Caltech, Pasadena, CA
	<i>Using The Cannon to Exploit the Overlap Between Kepler &amp; APOGEE</i>
2015	SDSS-IV Collaboration Meeting, IFT UAM-CSIC, Madrid, Spain
	<i>Survey Cross-Calibration Using The Cannon:</i>
	<i>APOGEE Labels from LAMOST Spectra</i>
2015	The Local Group Astrostatistics Conference, U. Mich, Ann Arbor, USA
	<i>Survey Cross-Calibration Using The Cannon:</i>
	<i>APOGEE Labels from LAMOST Spectra</i>
2014	MPIA-AIP Milky Way & Local Volume Meeting, AIP, Potsdam, Germany
	The Cannon: <i>A New Data-Driven Method for Retrieving Stellar Parameters and Abundances</i>
2014	Max Planck Institute for Astronomy, Heidelberg, Germany
	<i>Rotation Measures of Globular Cluster Pulsars as a Unique Probe of the Galactic Magnetic Field</i>
2013	NRAO, Charlottesville, VA
	<i>Rotation Measures of Globular Cluster Pulsars as a Unique Probe of the Galactic Magnetic Field</i>
2012	NRAO, Charlottesville, VA
	<i>Studies of Millisecond Pulsars in the Globular Cluster Terzan 5</i>

## SCIENCE POLICY

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2018-Present	Founder and Chair, Science Policy Committee, Graduate Student Council
2017-2019	Vice President, Science and Engineering Policy At Caltech (Student Club)
2017	International Summer Symposium on Science and World Affairs, Germany
	One of 40 international researchers selected to participate

	Talk title: <i>Towards a Framework for Space Traffic Control</i>
2017	Selected by Caltech to participate in Congressional Visits Day, Washington DC
2014	Selected by the American Astronomical Society to participate in Congressional Visits Day, Washington DC

## PUBLIC OUTREACH

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2015-Present	Lecturer, amateur astronomy societies and observatories
2015-Present	Volunteer, Caltech Astronomy Outreach program
2014-2015	Volunteer, Center for Astronomy Education and Outreach, Heidelberg, Germany
2014	AAS Astronomy Ambassadors Workshop, AAS 223rd Meeting
2012-2013	Lecturer and volunteer, McCormick Public Observatory, Charlottesville VA

## WRITING

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2019	<a href="#">Article</a> on AT2018cow for Submillimeter Array Newsletter
2018	<a href="#">Article</a> on cosmic forensics for Caltech Letters platform
2015	<a href="#">Press release</a> for the Max Planck Institute of Astronomy, Heidelberg, Germany
2015	<a href="#">Blog post</a> for the UniverseToday news site
2014	<a href="#">Blog post</a> on Congressional Visits Day for the American Astronomical Society
2010-2014	<a href="#">Blogger</a> , MIT admissions website
2011	<a href="#">Article</a> for MIT News