

# Taylor Alexandra Hutchison

## NSF Graduate Fellow

Department of Physics & Astronomy  
Texas A&M University  
College Station, TX 77843-4242

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## RESEARCH INTERESTS

Reionization, high- $z$  universe, near-infrared spectroscopy, high- $z$  spectroscopic tracers, galaxy formation & evolution, Lyman- $\alpha$  emitters, intergalactic medium, photoionization modeling, high- $z$  analogs

## EDUCATION

<b>Ph.D. in Astronomy</b> (in progress)	(expected) May 2022
<b>M.S. in Astronomy</b>	May 2019
Texas A&M University (TAMU) Department of Physics and Astronomy College Station, TX 77843-4242 Advisor: Dr. Casey Papovich	
<b>B.S. in Physics, <i>Minor in Mathematics</i></b>	May 2016
Southwestern University 1001 E. University Ave. Georgetown, TX 78626 Advisor: Dr. Mark Bottorff	

## APPOINTMENTS

Graduate Student (UNDER DR. C. PAPOVICH)	Texas A&M, 2016 – present
Keck Visiting Scholar (UNDER DR. J. WALAWENDER)	Keck Observatory, Fall 2019
Research Assistant (UNDER DR. M. BOTTORFF)	Southwestern, 2014 – 2016
King Creativity Scholar (UNDER O.L. FELLOWS)	Southwestern, 2014 – 2015
King Creativity Scholar (UNDER DR. S. ALEXANDER)	Southwestern, 2013 – 2014
Research Assistant (UNDER DR. S. ALEXANDER)	Southwestern, Summer 2013

## HONORS & AWARDS

— SOME FUNDED —	Dr. Joseph Newton Graduate Service Award	Fall 2019
	<b>W. M. Keck Observatory Visiting Scholar</b>	Fall 2019
	Texas A&M Prestigious Fellowship Scholar	2019 – 2022
	Leadership in Equity and Diversity (LEAD) Award	Spring 2018
	<b>NSF Graduate Research Fellowship</b>	2018 – 2022
	<b>Texas A&amp;M Graduate Diversity Excellence Fellowship</b>	2016 – 2020
	Ruter Scholar Award	2012 – 2016
	Distinction Award	2012 – 2016
	King Creativity Award	Spring 2014
	<b>King Creativity Scholar</b>	2014, 2015

NOTE: any activities that were affected by COVID-19 & occurred virtually are marked by **[COVID-19]**

## AWARDS &amp; GRANTS

FY21	NASA-Awarded Keck Principal Investigator Data Award	\$17.2K
FY20	NASA-Awarded Keck Principal Investigator Data Award	\$17.2K
FY20	Dr. Joseph Newton Graduate Service Award	\$1K
FY20–22	Texas A&M University Prestigious Fellowship Scholar	\$1K / yr
FY20	Mitchell Institute EPO: <i>Astronomy on Tap</i>	\$1.2K
FY20	Mitchell Institute EPO: <i>Conferences for Undergraduate Women in Physics</i>	\$30K
FY19	Office of Graduate and Professional Studies Travel Award	\$750
FY19	Leadership in Equity and Diversity (LEAD) Award	\$500
FY19	Mitchell Institute EPO: <i>Astronomy on Tap</i>	\$600
FY19–22	<b>NSF Graduate Research Fellowship</b>	\$138K
FY17+	Dept. of Physics & Astronomy Diversity Grant <i>The Society for the Under-represented in Physics &amp; Astronomy</i>	\$1.5K / yr
FY17–20	<b>Graduate Diversity Excellence Fellowship</b>	\$127.7K
FY13–16	Ruter Scholar Award	\$94K
FY13–16	Distinction Award	\$40K
FY14	King Creativity Award	\$1.5K
FY14,15	King Creativity Scholar	\$2K x 2

## OBSERVING PROGRAMS / GENERAL EXPERIENCE

PROGRAMS	<b>W. M. Keck Observatory</b> , HI – Keck I, 10-meter telescope	
	— <b>MOSFIRE, NIR Spectrograph</b> .....	<b>15 nights</b>
	◦ primary or secondary science lead .....	12 nights
	◦ engineering time .....	3 nights
	<b>Cerro Tololo Inter-American Observatory</b> , Chile – Blanco 4-meter telescope	
	— <b>DECam, Wide-Field CCD Imager</b> .....	<b>8 nights</b>
	◦ contributing scientist .....	3 nights
	◦ Began <b>Dark Energy Survey</b> Year 6 Observations .....	5 nights
	<b>Madrona Peak Observatory</b> , TX – Robotic 0.6-meter telescope	
	— Silicon Digital CCD, primary science lead .....	10+ nights
GENERAL EXPERIENCE	<b>Fountainwood Observatory</b> , TX – 0.4-meter telescope	
	— Silicon Digital CCD, primary science lead .....	40+ nights
	<b>W. M. Keck Observatory</b> , HI – Keck I & II, 10-meter telescopes	
	— During W. M. Keck Visting Scholar appointment:	
	◦ MOSFIRE, NIR Spectrograph, shadowed E. Manjavacas .....	1 night
	◦ LRIS, Optical Spectrometer, shadowed J. Walawender .....	1 night
	◦ KCWI, Optical Integral Field Spectrograph, shadowed L. Rizzi .....	1 night
	<b>McDonald Observatory</b> , TX – 0.8-meter telescope	
	— <b>Silicon Digital CCD</b> , mentored TAMU REU students .....	<b>11 nights</b>
	◦ as only graduate student .....	6 nights
	◦ supporting fellow graduate student .....	5 nights
	<b>Whipple Observatory</b> , AZ – 1.5-meter telescope	
	— <b>FAST, Optical Spectrograph</b> , assisted L. Macri .....	<b>3 nights</b>

## CONFERENCES &amp; PRESENTATIONS

**Science Presentations**

Poster: (anticip.) SPIE Telescopes & Instrumentation <a href="#">[COVID-19]</a>	14 December 2020
Invited Talk: TAMU Nuclear+Astro Seminar <a href="#">[COVID-19]</a>	25 September 2020
Poster: Keck Science Meeting ( <a href="#">interactive</a> ) <a href="#">[COVID-19]</a>	24-25 September 2019
Talk: TAMU Astrosymposium <a href="#">[COVID-19]</a>	17 August 2020
Talk: SAZERAC Virtual Conference <a href="#">[COVID-19]</a> ( <a href="#">recording</a> )	6 July 2020
Invited Talk: Lancaster XGAL Seminar (UK) <a href="#">[COVID-19]</a>	14 April 2020
Invited Talk: Gemini Headquarters (HILO, HI)	24 February 2020
Talk: American Astronomical Society #235 (HONOLULU, HI)	5 January 2020
Talk: Keck Summit Talk (MAUNAKEA)	9 December 2019
Talk: Keck Visiting Scholar: Exit Talk (WAIMEA, HI)	24 October 2019
Talk: Keck Visiting Scholar: Entrance Talk (WAIMEA, HI)	2 October 2019
Talk: Keck Science Meeting, UCLA (LOS ANGELES, CA)	20 September 2019
Talk: TAMU Astrosymposium (COLLEGE STATION, TX)	23 August 2019
Talk: Barefoot in the EoR (FITZROY ISLAND, QLD, AU)	17 July 2019
Talk: Extremely Large Telescopes Conf., UCLA (LOS ANGELES, CA)	29 January 2019
Talk: TAMU Astrosymposium (COLLEGE STATION, TX)	24 August 2018
Talk: 2-min; DES Collaboration Meeting (COLLEGE STATION, TX)	17 May 2018
Talk: CEERS Team Meeting (MAGNOLIA, TX)	1 February 2018
Talk: Star Formation in Era of JWST (COLLEGE STATION, TX)	1 November 2017

*Led by D. Calzetti & R. Kennicutt*

Poster: Frank N. Bash Symposium (AUSTIN, TX)	24-25 October 2017
Talk: 1-min; Frank N. Bash Symposium (AUSTIN, TX)	24 October 2017
Talk: TAMU Astrosymposium (COLLEGE STATION, TX)	25 August 2017
Talk: ZFOURGE Team Meeting (MAGNOLIA, TX)	24-28 October 2016
Talk: TAMU Astrosymposium (COLLEGE STATION, TX)	26 August 2016

**Professional Development Presentations**

Talk: GLASS, matplotlib & Effective Plotting ( <a href="#">recording</a> )	9 October 2020
Talk: MAGIC+GLASS, Grants & Opportunities (& Finding Them)	14 August 2020
Talk: MAGIC, Conferences & Presentations (Making a Good One)	10 July 2020
Talk: MAGIC+GLASS, Crafting Your CV/Resume ( <a href="#">recording</a> )	24 June 2020
Talk: MAGIC, Building Your Professional Website ( <a href="#">recording</a> )	3 April 2020

**Outreach Presentations**

Invited: (anticip.) W.M. Keck Observatory Public Talk	9 December 2020
Invited: <i>The Earth is Flat on Planet Pluto</i> , David Sobral ( <a href="#">recording</a> )	1 July 2020
Talk: Warrior Scholar Project (COLLEGE STATION, TX) <a href="#">[COVID-19]</a>	26 June 2020
Talk: <i>Astronomy on Tap</i> (BRYAN, TX) <a href="#">[COVID-19]</a> ( <a href="#">recording</a> )	24 June 2020
Talk: <i>Astronomy on Tap</i> (AUSTIN, TX) <a href="#">[COVID-19]</a> ( <a href="#">recording</a> )	31 March 2020
Talk: Society for Physics Students (COLLEGE STATION, TX) <a href="#">[COVID-19]</a>	24 March 2020
Talk: <i>Astronomy on Tap</i> (BRYAN, TX)	14 August 2019
Talk: Warrior Scholar Project (COLLEGE STATION, TX)	27 June 2019
Talk: Warrior Scholar Project (COLLEGE STATION, TX)	28 June 2019
Talk: <i>Astronomy on Tap</i> (BRYAN, TX)	11 October 2018
Talk: Warrior Scholar Project (COLLEGE STATION, TX)	29 June 2018
Talk: Warrior Scholar Project (COLLEGE STATION, TX)	28 June 2018
Talk: <i>Camp For All</i> (BURTON, TX)	21 April 2018

**Undergraduate Presentations**

Talk: Creative Works Symposium, Senior Capstone (GEORGETOWN, TX)	12 April 2016
Poster*: Creative Works Symposium (GEORGETOWN, TX)	April 2015
Poster*: King Creativity Symposium (GEORGETOWN, TX)	April 2015
Poster: APS March Meeting (SAN ANTONIO, TX)	March 2015
Poster: CUWiP <sup>◇</sup> (BROWNSVILLE, TX)	January 2015
Poster: APS Meeting; Texas Section (COLLEGE STATION, TX)	October 2014
Poster*: Creative Works Symposium (GEORGETOWN, TX)	April 2014
Poster*: King Creativity Symposium (GEORGETOWN, TX)	April 2014

\* Poster paired with Display Table

**SERVICE & OUTREACH****International Level**

#UniqueScientists, Editing Director since May 2019

**National Level**

*Letters to a Pre-Scientist* Pen Pal, since Fall 2018  
 Warrior Scholar Project\*: STEM Week TA TAMU, since Summer 2018

**University Level**

APS CUWiP 2020 Organizing Committee (for TAMU) <sup>▷</sup> TAMU, 2019 – 2020  
 RetainU Undergraduate Mentoring Program TAMU, 2017 – 2018  
 March for Science, *Meet a Scientist* TAMU, April 2017  
 King Creativity Grant Allocation Committee Southwestern, Fall 2014

**Department Level**

Departmental Graduate Records Committee TAMU, since Spring 2020  
 Mentoring & Advising Graduates in an Inclusive Community <sup>⊙</sup> TAMU, since Fall 2019  
*Co-founder, procuring IRB approval*  
 Astronomy Graduate Student Representative (for Faculty) TAMU, since Fall 2018  
 Departmental Climate and Diversity Committee TAMU, 2018 – 2020  
 Society for the Under-represented in Physics & Astronomy <sup>◇</sup> TAMU, since 2016  
*Co-founder, grant-funded*  
 TAMU Physics & Engineering Festival (annual event) TAMU, since Spring 2017  
 Dept. Moving Transition Team Member Southwestern, 2015 – 2016

**Local Community Level**

Preparing Under-represented Students for Grad School 2016 – 2018  
*Mentoring recent grads of Talented & Gifted Magnet (3)*  
*Mentoring recent grads of Southwestern University (4)*  
 Astronomy Outreach, *Astronomy on Tap* (monthly event) TAMU, since Spring 2018  
 Astronomy Outreach, *Camp For All* (annual event) TAMU, since Spring 2017  
 TAMU Star Parties (occasional volunteer) TAMU, Fall 2016  
 Fountainwood Observatory Public Nights Southwestern, 2012 – 2016  
 Physics Outreach, Williamson County Middle Schools Southwestern, 2013 – 2016  
 Seaperch Program Mentor Southwestern, 2014 – 2015

\* [warrior-scholar.org](http://warrior-scholar.org) <sup>▷</sup> TAMU CUWiP – [cuwip.tamu.edu](http://cuwip.tamu.edu)

<sup>⊙</sup> MAGIC – [tamu-magic.github.io](https://tamu-magic.github.io) <sup>◇</sup> SUPA – [tx.ag/supa](http://tx.ag/supa)

PANELS

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(invited) Graduate Students, APS April Meeting  
 Activism & Outreach, TAMU CUWiP 2020  
 Undergraduate Advice, Intro. to Physics Seminar

[COVID-19], 18 April 2020  
 TAMU, 18 January 2020  
 TAMU, 26 April 2017

PUBLICATIONS

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## REFEREED PUBLICATIONS

**First Author** 

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*Near-Infrared Spectroscopy of Galaxies During Reionization: Measuring C III] in a Galaxy at  $z = 7.5$*  // [arXiv:1905.08812](#) (**13 citations**)

The Astrophysical Journal, Volume 879, Issue 2, article id. 70, 16 pp. (2019)

**T. Hutchison**, C. Papovich, S. Finkelstein, M. Dickinson, I. Jung, A. Zitrin, R. Ellis, S. Malhotra, J. Rhoads, G. Roberts-Borsani, M. Song, V. Tilvi

**Co-Author** 

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*Texas Spectroscopic Search for Ly $\alpha$  Emission at the End of Reionization III. The Ly $\alpha$  Equivalent-width Distribution and Ionized Structures at  $z > 7$*  // [arXiv:2009.10092](#) (**1 citations**)  
 Accepted by the Astrophysical Journal (ApJ)

I. Jung, S. Finkelstein, M. Dickinson, **T. Hutchison**, R. Larson, C. Papovich, L. Pentericci, A. Straughn, Y. Guo, S. Malhotra, J. Rhoads, M. Song, V. Tilvi, I. Wold

*The properties of He II 1640 emitters at  $z \sim 2.5-5$  from the VANDELS survey* // [arXiv:1911.09999](#)  
 The Astronomy & Astrophysics Journal, Volume 636, eid. A47, 21 pp. (2020) (**6 citations**)

A. Saxena, L. Pentericci, M. Mirabelli, D. Schaerer, R. Schneider, F. Cullen, R. Amorin, A. Bolzonella, A. C. Bongiorno, and 17 additional authors, including **T. Hutchison**

*Texas Spectroscopic Search for Ly $\alpha$  Emission at the End of Reionization II. The Deepest Near-Infrared Spectroscopic Observation at  $z > 7$*  // [arXiv:1901.05967](#) (**5 citations**)

The Astrophysical Journal, Volume 877, Issue 2, article id. 146, 9 pp. (2019)

I. Jung, S. Finkelstein, M. Dickinson, **T. Hutchison**, R. Larson, C. Papovich, L. Pentericci, M. Song, H. Ferguson, Y. Guo, S. Malhotra, B. Mobasher, J. Rhoads, V. Tilvi, I. Wold

**Contributing Scientist** 

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*Space Telescope and Optical Reverberation Mapping Project. XII. Broad-Line Region Modeling of NGC 5548*

Accepted by the Astrophysical Journal (ApJ)

P. R. Williams, A. Pancoast, T. Treu, B. J. Brewer, B. M. Peterson, A. J. Barth, and 153 additional authors, including **T. Hutchison**.

*Space Telescope and Optical Reverberation Mapping Project. IX. Velocity-Delay Maps for Broad Emission Lines in NGC 5548*

Submitted to the Astrophysical Journal (ApJ)

K. Horne, G. De Rosa, B. M. Peterson, A. J. Barth, B. M. Peterson, and 153 additional authors, including **T. Hutchison**.

*Space Telescope and Optical Reverberation Mapping Project. VIII. Time Variability of Emission and Absorption in NGC 5548 Based on Modeling the Ultraviolet Spectrum*  
The Astrophysical Journal, Volume 881, Issue 2, article id. 153, 36 pp. (2019)  
G. A. Kriss, G. De Rosa, J. Ely, B. M. Peterson, J. Kaastra, and 163 additional authors, including **T. Hutchison**.

*Continuum Reverberation Mapping of the Accretion Disks in Two Seyfert 1 Galaxies*  
The Astrophysical Journal, Volume 854, Issue 2, article id. 107, 24 pp. (2018)  
M. Fausnaugh, D. Starkey, K. Horne, C. Kochanek, B. Peterson, and 67 additional authors, including **T. Hutchison**.

*Space Telescope and Optical Reverberation Mapping Project. VII. Understanding the Ultraviolet Anomaly in NGC 5548 with X-Ray Spectroscopy*  
The Astrophysical Journal, Volume 846, Issue 1, article id. 55, 24 pp. (2017)  
S. Mathur, A. Gupta, K. Page, R. Pogge, Y. Krongold, M. Goad, and 144 additional authors, including **T. Hutchison**.

*Reverberation Mapping of Optical Emission Lines in Five Active Galaxies*  
The Astrophysical Journal, Volume 840, Issue 2, article id. 97, 27 pp. (2017)  
M. Fausnaugh, C. Grier, M. Bentz, K. Denney, G. De Rosa, B. Peterson, and 65 additional authors, including **T. Hutchison**.

*Space Telescope and Optical Reverberation Mapping Project. IV. Anomalous Behavior of the Broad Ultraviolet Emission Lines in NGC 5548*  
The Astrophysical Journal, Volume 824, Issue 1, article id. 11, 10 pp. (2016)  
M. Goad, T. Korista, G. De Rosa, A. Kriss, and 96 additional authors, including **T. Hutchison**.

*Space Telescope and Optical Reverberation Mapping Project. III. Optical Continuum Emission and Broadband Time Delays in NGC 5548*  
The Astrophysical Journal, Volume 821, Issue 1, article id. 56, 25 pp. (2016)  
M. Fausnaugh, K. Denney, A. Barth, M. Bentz, M. Bottorff, and 92 additional authors, including **T. Hutchison**.

## WHITE PAPERS

### Contributing Scientist

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*UV Diagnostics of Galaxies from the Peak of Star-Formation to the Epoch of Reionization*  
C. Papovich, D. Stark, S. Finkelstein, S. Ravindranath, D. Berg, M. Bradac, and 16 additional authors, including **T. Hutchison**. // [arXiv:1903.04524](#)

*Spatially-resolved studies of star-forming galaxies in the reionization epoch*  
S. Ravindranath, C. Papovich, B. James, G. Snyder, A. Jaskot, H. Ferguson, and 12 additional authors, including **T. Hutchison**. // [article link](#)

*Unveiling the Phase Transition of the Universe During the Reionization Epoch with Lyman-alpha*  
S. Finkelstein, M. Bradac, C. Casey, M. Dickinson, R. Endsley, and 13 additional authors, including **T. Hutchison**. // [arXiv:1903.04518](#)



TEACHING EXPERIENCE

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**Assistant**

Warrior Scholar Project: STEM Week	TAMU, Summer 2018, 2019, [COVID-19] 2020
ASTR 314: Survey of Astronomy	TAMU, Spring 2018
ASTR 101: Honors, Basic Astronomy	TAMU, Fall 2017
ASTR 314: Survey of Astronomy	TAMU, Spring 2017
ASTR 101: Honors, Basic Astronomy	TAMU, Fall 2016
Advisor, Independent Study	Southwestern, 2016
Undergraduate Astronomy	Southwestern, Fall 2014

CIRCULARS & TELEGRAMS

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*ASASSN-17bq: Discovery of A Supernova in GALEXASC J072538.14+590010.5*  
 L. Macri, **T. Hutchison**, R. A. Koff et al. 2017, ATel. 10027, 1

WEBSITE ARCHITECT

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Personal website: [aibhleog.github.io](http://aibhleog.github.io), created starting websites for (5) colleagues  
 GLASS, Astronomy Graduate Professional Development Program: [tamu-glass.github.io](http://tamu-glass.github.io)  
 JWST Texas Master Scholars (with Dr. M. Bagley): [jwst-texas-master-scholars.github.io](http://jwst-texas-master-scholars.github.io)  
 Mentoring & Advising Graduates in an Inclusive Community (MAGIC): [tamu-magic.github.io](http://tamu-magic.github.io)  
 Conference for Undergraduate Women in Physics (CUWiP) at TAMU: [cuwip.tamu.edu](http://cuwip.tamu.edu)  
 Society for the Under-represented in Physics & Astronomy (SUPA): [tx.ag/supa](http://tx.ag/supa)

PROGRAMMING

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Fluent: Python, Tex, Visual Basic  
 Experience with: html, C++, bash, IDL, R

PRESS COVERAGE

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*Texas A&M Today*, "Stargazing", 1 July 2019  
*Texas A&M University: Science*, "Texas A&M NSF Graduate Research Fellow  
 Taylor Hutchison Finds Focus in Studying Universe's Earliest Stars and  
 Sharing Passion for Science", 28 June 2019

CERTIFICATES

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OGAPS Intermediate Leadership Development Certificate	4 May 2017
OGAPS Basic Leadership Development Certificate	4 May 2017

PROFESSIONAL SOCIETIES

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American Astronomical Society	2019 – present
Sigma Xi, The Scientific Research Honor Society	2018 – present
American Physical Society	2014 – present
Alpha Delta Pi (academic sorority)	2015 – present