

# Taylor Alexandra Hutchison

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## RESEARCH INTERESTS

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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

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**Ph.D. in Astronomy** (in progress) (expected) May 2022

**M.S. in Astronomy** May 2019

Texas A&M University (TAMU)  
Department of Physics and Astronomy  
College Station, TX 77843-4242  
Advisor: Dr. Casey Papovich

**B.S. in Physics, *Minor in Mathematics*** May 2016

Southwestern University  
1001 E. University Ave.  
Georgetown, TX 78626  
Advisor: Dr. Mark Bottorff

## APPOINTMENTS

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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

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— 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>17 nights</b>
	◦ primary or secondary science lead .....	14 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 co-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 & PRESENTATIONS

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**Science Presentations**

Invited Talk: EURECA Seminar, UofA (virtual)	16 April 2021
Poster: SPIE Telescopes & Instrumentation ( <a href="#">interactive</a> ) <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 2020
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
<i>Led by D. Calzetti &amp; R. Kennicutt</i>	
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: Telescope Proposals, a “How To” Guide ( <a href="#">recording</a> )	5 March 2021
Talk: GLASS, <code>matplotlib</code> & 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: W. M. Keck Observatory Virtual Public Talk ( <a href="#">recording</a> )	9 December 2020
Talk: <i>Astronomy on Tap</i> (BRYAN, TX) <a href="#">[COVID-19]</a> ( <a href="#">recording</a> )	16 September 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
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#### National Level

Warrior Scholar Project*: STEM Week TA	TAMU, since Summer 2018
<i>Letters to a Pre-Scientist</i>	Pen Pal, 2018 – 2019

#### State Level

Texas Section APS Executive Committee	APS, since Spring 2021
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#### University Level

APS CUWiP 2020 Organizing Committee (for TAMU) <sup>▷</sup>	TAMU, 2019 – 2020
RetainU Undergraduate Mentoring Program	TAMU, 2017 – 2018
March for Science, <i>Meet a Scientist</i>	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> <i>Co-founder, current co-coordinator</i>	TAMU, since Fall 2019
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> <i>Co-founder, grant-funded</i>	TAMU, since 2016
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 <i>Mentoring recent grads of Talented &amp; Gifted Magnet (3)</i> <i>Mentoring recent grads of Southwestern University (4)</i>	2016 – 2018
Astronomy Outreach, <i>Astronomy on Tap</i> (monthly event)	TAMU, since Spring 2018
Astronomy Outreach, <i>Camp For All</i> (annual event)	TAMU, 2017 – 2019
TAMU Star Parties (occasional volunteer)	TAMU, Fall 2016

Fountainwood Observatory Public Nights  
 Physics Outreach, Williamson County Middle Schools  
 Seaperch Program Mentor

Southwestern, 2012 – 2016  
 Southwestern, 2013 – 2016  
 Southwestern, 2014 – 2015

\* [warrior-scholar.org](http://warrior-scholar.org)   ▷ TAMU CUWiP – [cuwip.tamu.edu](http://cuwip.tamu.edu)  
 ☉ MAGIC – [tamu-magic.github.io](https://tamu-magic.github.io)   ◊ SUPA – [tx.ag/supa](http://tx.ag/supa)

## PANELS

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(invited) Graduate Students, APS April Meeting	[COVID-19], 18 April 2020
Activism & Outreach, TAMU CUWiP 2020	TAMU, 18 January 2020
Undergraduate Advice, Intro. to Physics Seminar	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](https://arxiv.org/abs/1905.08812) (15 citations)

The Astrophysical Journal, Volume 879, Issue 2, article id. 70, 16 pg. (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](https://arxiv.org/abs/2009.10092) (7 citations)

The Astrophysical Journal, Volume 904, Issue 2, article id. 144, 27 pg. (2020)

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](https://arxiv.org/abs/1911.09999)

The Astronomy & Astrophysics Journal, Volume 636, eid. A47, 21 pg. (2020) (15 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](https://arxiv.org/abs/1901.05967) (6 citations)

The Astrophysical Journal, Volume 877, Issue 2, article id. 146, 9 pg. (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*

The Astrophysical Journal, Volume 902, Issue 1, article id. 74, 26 pg. (2020)

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 pg. (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 pg. (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 pg. (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 pg. (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 pg. (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 pg. (2016)

M. Fausnaugh, K. Denney, A. Barth, M. Bentz, M. Bottorff, and 92 additional authors, including **T. Hutchison**.

## SPIE CONFERENCE PROCEEDINGS

### First Author

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*Flexure updates to MOSFIRE on the Keck I telescope* // [arXiv:2012.09308](https://arxiv.org/abs/2012.09308)

Proc. SPIE 11447, Ground-based and Airborne Instrumentation for Astronomy VIII, 114476A

**T. Hutchison**, J. Walawender, S. H. Kwok // Paper No. 11447-114



## 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](#)

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TEACHING EXPERIENCE

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**Workshops**

Co-organizer of local JWST proposal planning workshops, as part of the STScI JWST Master Class

UT Austin & Texas A&M  
Spring 2020**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

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SUPERVISION / MENTORING

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**High School Students** (2)

Independent Study &amp; Mentorship Program, Frisco ISD

— N. Sathishkumar (Fall 2020 – Spring 2021)

— A. Kothuri (Spring 2021)

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CERTIFICATES

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(anticip.) CIRTLL Associate Certificate – Evidenced-Based Teaching Practices	April 2021
OGAPS Intermediate Leadership Development Certificate	4 May 2017
OGAPS Basic Leadership Development Certificate	4 May 2017

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

PROGRAMMING

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

PRESS COVERAGE

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*Constellations* with host Sarafina Nance, Seeker, “[How Space-Time Works When You Look at the Stars](#)” – Episode 3, 29 January 2021  
*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

PROFESSIONAL SOCIETIES

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SPIE: The International Society for Optics & Photonics	2020 – present
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