

Jo Taylor

Senior Staff Scientist, Science Support

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EMPLOYMENT	JWST/NIRISS branch	2018 - present
(STScI)	HST/COS branch	2016 - 2018
	HST/COS+STIS combined branch	2012 - 2016
EDUCATION	Indiana University; Bloomington, IN	2012
	B.S. in Astronomy/Astrophysics, B.S. in Physics	
	Minors in Mathematics and Italian	
LEADERSHIP	JWST NIRISS Wide-field Slitless Spectroscopy (WFSS) Team Lead	2023 – present
	<i>Organize and chair NIRISS WFSS team meetings, act as NIRISS WFSS liaison, prioritize and plan all NIRISS WFSS work.</i>	
	ULLYSES Data Products Team Lead	Aug 2020 - 2024
	<i>Manage team of 15 members across divisions to create data products for the largest ever DD program (~1000 orbits). Design and implement an automated system to create high-level science spectral and timeseries products using data from 4 observatories. Lead and coordinate release of products with OPO, MAST, and HSTMO; 8 data releases to date. Design database, catalog, and search interface in coordination with MAST. Design and maintain public-facing website and data reduction pipeline. Present updates to STUC. Chair weekly team meetings. Interface with external stakeholders and contributors.</i>	
	ULLYSES Workshop Science Organizing Committee member	2024
	JWST Pipeline Testing and Validation Lead	2018 - 2024
	<i>Coordinate and participate in testing for JWST pipeline builds.</i>	
	NIRISS External Flat Field Commissioning Analysis Lead	2022
	NIRISS Stray Light Contamination Commissioning Analysis Lead	2022
	ULLYSES Data Team Deputy	Mar - Aug 2020
	Spectroscopy Code Review Chair	2015 - 2020
	<i>Created a code review meeting for spectroscopy team members. Plan and organize meetings.</i>	
	INS New Hire Training Project Supervisor	2014, 2019
	COS ETC Lead	2016 - 2018
	COS and FOS Help Desk Lead	2016 - 2018
	Triage Help Desk Lead	2015 - 2018
	COS Pipeline Team Lead	2016 - 2018
	<i>Plan and coordinate all COS calibration pipeline updates, reference file changes, and</i>	

database updates. Plan and lead all COS team pipeline testing. Interface directly with DMS, DMD, and SCSB stakeholders. Prepare agendas and chair both pipeline and software meetings. Directly supervised 3 pipeline builds, including all changes needed for COS Lifetime Position 4.

COS Pipeline Team Deputy 2014 - 2016

JWST/NIRISS INSTRUMENT SUPPORT NIRISS WFSS Trace Analysis 2023 – 2026
Derive trace polynomial and spatial dependence for all 12 NIRISS/WFSS modes.
 NIRISS WFSS team member 2018 - present
 NIRISS Commissioning Support and Analysis 2021 - 2022
WFSS flux calibration, WFSS wavelength calibration, detector features and Anomalies.
 NIRISS Ghost Investigation and Analysis 2021 - 2022
 Implement Git Version Control Standards 2018 - 2022

HST/COS INSTRUMENT SUPPORT COS/FUV LP12 Spectral Resolution Analysis 2026 - present
 COS/FUV LP11 Coarse Focus Analysis 2025 - 2026
 COS Data Retrieval and Monitoring (COSMO project) 2012 - 2018, 2020 – present
Design and maintain end-to-end system for automatically retrieving and calibrating all COS data. Design and maintain codebase to automatically ingest observational information and statistics into custom COSMO database.
 COS/NUV Time-Dependent Sensitivity Analysis 2013 - 2018
 Pipeline Build (OPUS/DP) Testing 2012 - 2018
 COS/FUV LP4 Support 2016 - 2017
Supervise and assist in testing all changes needed to support LP4 move.
 COS/FUV Hotspot Analysis 2015
 COS/FUV LP3 Support 2014 - 2015
Test new optimal extraction algorithm, test new trace correction module, verify encircled energy calculations, verify new 1D spectral products, test DQ (Data Quality) flagging algorithm, and perform regression testing.
 COS Line Spread Function Creation using Code V 2014

HST/STIS INSTRUMENT SUPPORT STIS Pipeline Team Deputy 2014 - 2016
 STIS CCD Performance Monitoring 2013 - 2016
 STIS CCD Dark Analysis 2013 - 2016
 STIS CCD Bias and Readnoise Analysis 2013 - 2016
 STIS CCD Annealing Monitoring and Analysis 2013 - 2016
 CalSTIS Testing 2012 - 2013
 Pipeline Build (OPUS/DP) Testing 2013

USER SUPPORT NIRISS Help Desk Agent 2018 - present
 Improving JWST Data Products Workshop 2023
Organized and led a day session on JWST WFSS products.
 JWebbinar Series 2021-2022
Prepared tutorials for and presented the following 6 JWebbinars:

*NIRISS and NIRCams: Lessons Learned from Commissioning (1 session),
 JWST Pipeline Refresher (1 session), Pipeline 101 (1 session),
 Pipeline in Spectroscopy Mode (3 sessions), Pipeline for ERS teams (1 session),
 Pipeline in Imaging Mode (3 sessions).*

JWST Slitless Spectroscopy Master Class Instructor 2019
 COS and FOS Help Desk Agent 2012 - 2018
 STIS and GHRS Help Desk Agent 2012 - 2016
 Triage Help Desk Agent 2013 - 2015

**RESEARCH
 SUPPORT**

An Optimized COS Background Correction 2020 - 2024
*With Dr. Svea Hernandez
 Investigate the COS/FUV dark current over time, create FUV superdarks,
 develop a dedicated pipeline to perform optimal background correction based
 on statistical methods.*

SPAMM: Spectral Properties of AGNs Modeled with MCMC 2016 - 2019
*With Dr. Gisella de Rosa
 Develop AGN spectral modeling code, SPAMM, to perform spectral
 decomposition using Bayesian methods.*

Horizontal Branch Star Atmospheres Near 20,000K 2016 - 2017
*With Dr. Tom Brown
 Perform custom calibration of STIS data of 6 hot subdwarfs straddling the
 Momany jump (14759). Custom calibration included crowded field multi-object
 slit spectroscopy, custom CR-rejection algorithm, and custom hot pixel flagging.*

Searching for a Supermassive Black Hole in BCG 2261 2015 - 2016
*With Dr. Marc Postman
 Perform custom calibration of STIS data of three "knots" in the core of the Abell
 2261 BCG (14046). Custom calibration included multi-object slit spectroscopy
 and CTI-, herringbone-, and fringe-corrections.*

MISC.

Divisional Assessment Group member 2023-2024
*Assess if divisional reorganization is necessary within INS and provide feedback to
 INS management regarding staff morale and efficiency. Crafted a division-wide
 survey, organized 10+ focus sessions, published 20 page report on findings and
 recommendations.*

ULLYSES: Continuing the Voyage of Discovery workshop presenter 2024
*Presented 30 minute talk on description of Data Products, presented 2 hour
 hands-on data tutorial.*

Mentor for INS Mentoring Program 2018 – 2020, 2022-present
 INS New Hire Trainer 2013 - 2022
Trained 36 new hires on Spectroscopy, GitHub, JWST APT, and JWST ETC

JWST TAC Panel Leveler 2021
 ReDCaT Team member (formerly CRDS/CDBS team) 2012 - 2016
 HST TAC Panel Support Scientist 2013

SOFTWARE

Programming Languages

SKILLS	<i>Python (expert), HTML (intermediate), Fortran (basic), IDL (basic)</i>	
	Astronomical Software	
	<i>APT (proficient), ETC (proficient), DS9 (proficient)</i>	
	Tools	
	<i>Git/version control (expert), SQL (expert), Jira (proficient), LaTeX (intermediate), Code V (basic), Docker (basic), scikit-learn Machine Learning (basic)</i>	
TEAM AWARDS	AURA Team Outstanding Achievement Award	2024
	<i>ULLYSES Team</i>	
	NASA Silver Group Achievement Award	2024
	<i>JWST Instrument Commissioning Team</i>	
	STScI Achievement Award	2024
	<i>For the JWST Data to Papers Initiative (D2P)</i>	
	AURA Team Outstanding Achievement Award	2023
	<i>JWST Commissioning Team</i>	
	STScI Achievement Award	2022
	<i>STScI Scientists, Engineers, Technical, and Operations Staff</i>	
	AURA Team Outstanding Achievement Award	2021
	<i>JWST Cycle 1 User Support Team</i>	
	STScI Achievement Award	2021
	<i>JWebbinar Team</i>	
	STScI Achievement Award	2021
	<i>JWST DMS Working Group</i>	
	STScI Achievement Award	2020
	<i>2019 JWST Master Class Support Team</i>	
	NASA Group Achievement Award	2018
	<i>Hubble Cosmic Origins Spectrograph Operations Team</i>	
	NASA Hubble 25 th Anniversary Commendation	2018
	<i>Hubble Space Telescope Science team</i>	
	STScI Achievement Award	2018
	<i>COS Lifetime Extension Initiative & COS2025 Teams</i>	
TRAINING & COURSES	Machine Learning and Deep Learning with Python (Accelebrate)	2025
	Advanced Python with Pandas (Accelebrate)	2022
	Advanced Python: Object-Oriented Programming (Accelebrate)	2023
	Introduction to Docker (STScI/Software Carpentry)	2021
	Unconscious Bias: Understanding Bias to Unleash Potential (Franklin Covey)	2020
	Advanced Python Programming (Accelebrate)	2018
	Safe Zone Training (JHU)	2018
	Advanced Python Mastery Course (Continuum Analytics)	2015
	Software Carpentry Course (Software Carpentry)	2013
	Scientific Python Course (STScI)	2012 – 2013
PREVIOUS RELEVANT	Research Assistant, Indiana University	2010 - 2012
	<i>Metallicities of Active Galaxies</i>	

EXPERIENCE *Advisor: Dr. John J. Salzer*

Research Intern, National Optical Astronomy Observatory 2011
Investigating X-ray selected AGN in a Merging Cluster
Advisor: Dr. Dara Norman

Research Intern, Lowell Observatory 2010
Using the O I λ 7774 Line as a Luminosity Indicator in Yellow Supergiants
Advisor: Dr. Philip Massey

Research Assistant, Indiana University 2008 - 2010
Spectroscopic Studies of Stars in NGC 752
Advisor: Dr. Catherine A. Pilachowski

OBSERVING EXPERIENCE Kitt Peak National Observatory; Tucson, AZ
WIYN 0.9m Telescope
KPNO 2.1m Telescope
WIYN 3.5m Telescope

Steward Observatory; Tucson, AZ
61" Kuiper Telescope

HST & JWST OBSERVING PROGRAMS Principal Investigator
HST/COS NUV Spectroscopic Sensitivity Monitoring: 15387, 14858
HST/STIS CCD Dark Monitor: 14412, 14413, 13980, 13981
HST/STIS CCD Bias and Read Noise Monitor: 14414, 14415, 13983, 13982
HST/STIS CCD Hot Pixel Annealing: 14416, 13894
HST/STIS CCD Performance Monitor: 14411, 13979

Co-Investigator
JWST/NIRISS WFSS Cy4 Wavelength Calibration Monitor: 09287
JWST/NIRISS WFSS Background: 09286
JWST/NIRISS WFSS Contamination Calibration: 04477
JWST/NIRISS External Flat Fields (L-flats) and Distortion: 01086
JWST/NIRISS Stray Light Contamination: 01095
JWST/NIRISS GR150C/R Flux Calibration: 01089
JWST/NIRISS GR150C/R Wavelength Calibration: 01090
HST/COS & HST/STIS ULLYSES: 84 programs

PROFESSIONAL MEMBERSHIPS American Astronomical Society 2010 - present
Society of Physics Students 2010 - 2013

PUBLICATIONS See [ORCID publications on ADS](#).

REFEREED PAPERS

1. Roman-Duval, J., Fischer, W. J., Fullerton, A. W., **Taylor, Jo**, et al.
The UV Legacy Library of Young Stars as Essential Standards (ULLYSES) Large Director's Discretionary Program with Hubble. I. Goals, Design, and Initial Results. 2025, ApJ, 985, 1.

2. Hernandez, S., Igoshev, A., **Taylor, Jo**, Sahnou, D., Jones, L.
Pushing the Limits of the Cosmic Origin Spectrograph (COS) with an Optimized Background Correction. 2024, PASP, 136, 6.
3. Doyon, R., Willot, C. J., Hutchings, J. B., . . . **Taylor, Jo**, et al.
The Near Infrared Imager and Slitless Spectrograph for the James Webb Space Telescope. I. Instrument Overview and In-flight Performance. 2023, PASP, 135, 1051.
4. Gardner, J. P., Mather, J. C., Abbott, R., . . . **Taylor, Jo**, et al.
The James Webb Space Telescope Mission. 2023, PASP, 135, 1048.
5. Rigby, J., Perrin, M., McElwain, M., . . . **Taylor, Jo**, et al.
The Science Performance of JWST as Characterized in Commissioning. 2023, PASP, 135, 1046.
6. Willott, C.J., Doyon, R., Albert, L., . . . **Taylor, Jo**, Volk, K., Zabl, J.
The Near-infrared Imager and Slitless Spectrograph for the James Webb Space Telescope. II. Wide Field Slitless Spectroscopy. 2022, PASP, 132, 1032.
7. Wegner, G.A., Salzer, J.J., **Taylor, Jo**, Hirschauer, A.S.
Metal Abundances and Star Formation Rates of Emission-line Galaxies in and around the Boötes Void. 2019, ApJ, 883, 1.
8. Brown, T.M., **Taylor, Jo**, Cassisi, S., Sweigart, A.V., Bellini, A., Bedin, L.R., Salaris, M., Renzini, A., Dalessandro, E.
A Universal Transition in Atmospheric Diffusion for Hot Subdwarfs Near 18,000 K. 2017, ApJ, 851, 2.
9. Burke-Spolaor, S., Gultekin, K., Postman, M., Lauer, T. R., **Taylor, Jo**, Lazio, T.J.W., Moustakas, L.A.
A Radio Relic and a Search for the Central Black Hole in the Abell 2261 Brightest Cluster Galaxy. 2017, ApJ, 849, 1.
10. Turner, J., Pearson, K., Biddle, L., . . . **Taylor, Jo**, Henz, T.
Ground-based near-UV observations of 15 transiting exoplanets: constraints on their atmospheres and no evidence for asymmetrical transits. 2016, MNRAS, 459, 1.
11. Turner, J., Smart, B., Hardegree-Ulmann, K. . . . **Taylor, Jo**, et al.
Near-UV and optical observations of the transiting exoplanet TrES-3b. 2013, MNRAS, 428, 1.

ORAL PRESENTATIONS

1. **Taylor, Jo**, Hernandez, S., Igoshev, A., Sahnou, D.
Pushing the Limits of the Cosmic Origins Spectrograph (COS) with Another COS Dark Correction (ACDC). AAS 246; June 2025; 228.03

NON-REFEREED PAPERS

2. Proffitt, C. R., Roman-Duval, J., **Taylor, Jo**, et al.
Close companions to the T Tauri Stars CVSO 109 and CVSO 165 Observed by the HST ULLYSES Program. RNAAS, 5, 2.
3. Roman-Duval, J., Proffitt, C. R., **Taylor, Jo**, et al.
Ultraviolet Legacy Library of Young Stars as Essential Standards (ULLYSES): Data Release 1. RNAAS, 4, 11.

CONFERENCE PROCEEDINGS

1. **Taylor, Jo**, Roman-Duval, J., Plesha, R., et al.
Setting Sail with ULLYSES. ASPC; Nov. 2024; Accepted for publication.
2. **Taylor, Jo.**
JWST NIRISS Simulations and How to Use Them. ASPC; Oct. 2019; 527, 705.
3. **Taylor, Jo**, Ely, J., Fix, M.
COSMO: Using Python and Databases to Monitor HST's Cosmic Origins Spectrograph. ASPC; Oct. 2016; 521, 410.
4. Sahnou, D., Becker, G., Debes, J., Ely, J., Lockwood, S., Massa, D., Oliveira, C., Penton, S., Proffitt, C., Roman-Duval, J., Sana, H., Sonnentrucker, P., **Taylor, Jo.**
Characterizing, controlling, and correcting distortions in the COS FUV detector. SPIE; Aug 2015; 9601, 96010Q.

TECHNICAL REPORTS

1. **Taylor, Jo**, Goudfrooij, P., LaMassa, S., Noirot, G., Plesha, R., Taylor, Jo, Volk, K.
Spatially Dependent Trace Solutions for JWST/NIRISS WFSS. In review.
2. **Taylor, Jo**, Johnson, C., Sahnou, D..
Lifetime Position 11 Coarse Focus Analysis. In review.
3. Noirot, G., Goudfrooij, P., LaMassa, S., Plesha, R., **Taylor, Jo**, Volk, K.
Global sky background images for JWST/NIRISS Wide-Field Slitless Spectroscopy. 2025, NIRISS Technical Report JWST-STScI-009057.
4. **Taylor, Jo**, Volk, K., Willott, C., Goudfrooij, P., Martel, A., Sohn, T.
NIRISS Commissioning Results: NIS-011a Illumination Flat Fields. 2022, NIRISS Technical Report JWST-STScI-008297.
5. Martel, A.R., Volk, K., Goudfrooij, P., **Taylor, Jo**, NIRISS Team.
NIRISS Commissioning Results: NIS-002 NIRISS Aliveness and Functional Tests (NGAS CAR-341, APT 1078). 2022, NIRISS Technical Report JWST-STScI-008132.

6. Sahnou, D., James, B., de Rosa, G., Fix, M., Oliveira, C., Penton, S., Sonnentrucker, P., **Taylor, Jo**, Wheeler, T., White, J.
Summary of COS Cycle 24 Calibration Plan. 2020, ISR COS 2020-10.
7. **Taylor, Jo**.
Cycle 24 COS/NUV Spectroscopic Sensitivity Monitor. 2018, ISR COS 2018-11.
8. Fox A., Penton, S., **Taylor, Jo**.
Focusing the COS/FUV G160M and G140L Gratings at Lifetime Position 4. 2017, ISR COS 2017-17.
9. **Taylor, Jo**.
Cycle 23 COS/NUV Spectroscopic Sensitivity Monitor. 2017, ISR COS 2017-13.
10. Debes, J. H., Becker, G., Roman-Duval, J., Ely, J., Massa, D., Oliveira, C., Plesha, R., Proffitt, C., **Taylor, Jo**.
Third COS FUV Lifetime Calibration Program: Flatfield and Flux Calibrations. 2016, ISR COS 2016-15.
11. **Taylor, Jo**.
Cycle 22 COS/NUV Spectroscopic Sensitivity Monitor. 2016, ISR COS 2016-10.
12. Sonnentrucker, P., De Rosa, G., Debes, J. H., Ely, J., Fox, A., Lockwood, S., Fix, M., Oliveira, C., Penton, S., Roman-Duval, J., Sahnou, D., **Taylor, Jo**, et al.
Summary of COS Cycle 23 Calibration Plan. 2016, ISR COS 2016-04.
13. Sonnentrucker, P., Becker, G., Bostroem, K. A., . . . **Taylor, Jo**, et al.
Summary of COS Cycle 22 Calibration Plan. 2016, ISR COS 2016-04.
14. Sana, H., Fox, A., Roman-Duval, J., . . . **Taylor, Jo**, Welty, A., Wheeler, T.
Summary of the STIS Cycle 21 Calibration Program. 2015, ISR STIS 2015-09.
15. Sana, H., Fox, A., Roman-Duval, . . . **Taylor, Jo**, Welty, A., Wheeler, T.
Summary of the COS Cycle 21 Calibration Program. 2015, ISR COS 2015-06.
16. Proffitt, C., Bostroem, K. A., Ely, J., . . . **Taylor, Jo**.
Changes to the COS Extraction Algorithm for Lifetime Position 3. 2015, ISR COS 2015-03.
17. **Taylor, Jo**, Proffitt, C., Roman-Duval, J., Jedrzejewski, R., Ely, J., Oliveira, C.
COS Optimal Extraction Trace Correction Verification. 2015, TIR COS 2015-02.
18. Hernandez, S., Aloisi, A., Cox, A., Ely, J., Lockwood, S., Oliveira, C., Penton, S., Proffitt, C., Sana, H., **Taylor, Jo**.
Overview of the STIS Monitoring Program. 2015, TIR STIS 2014-02.

1. **Taylor, Jo**, Baines, T., Cooper, R., et al.
JWST NIRISS Updates in the First Year of Science. AAS 243; January 2024; 360.18
2. **Taylor, Jo**, Albert, L., Artigau, E., et al.
JWST NIRISS Post-Commissioning Summary. AAS 241; January 2023; 463.02
3. **Taylor, Jo**, De Rosa, G., King, A.
SPAMM: Spectral Properties of AGN Modeled through MCMC. Serbian Conference on Spectral Line Shapes in Astrophysics XII; June 2019
4. **Taylor, Jo**, NIRISS Team.
The Observing Modes of JWST/NIRISS. AAS 232; June 2018; 125.01
5. **Taylor, Jo**, De Rosa, G., Fix, M., et al.
Updated Status and Performance at the Fourth HST COS FUV Lifetime Position. AAS 230; June 2017; 117.12
6. **Taylor, Jo**, Bostroem, K. A., Debes, J., et al.
Changes to the Spectral Extraction Algorithm At the Third COS FUV Lifetime Position. AAS 225; Jan 2015; 338.48
7. **Taylor, Jo**, Aloisi, A., Bacinski J., et al.
Updated Status and Performance for the Cosmic Origins Spectrograph Onboard the Hubble Space Telescope. AAS 222; June 2013; 316.06.
8. **Taylor, Jo**, Norman, D., Soechting, I., Coldwell, G.
X-Ray Selected AGN in A Merging Cluster. AAS 219; Jan. 2012; 154.23.
9. **Taylor, Jo**, Massey, P., Drout, M., Tokarz, S., Caldwell, N. *The O I λ 7774 Line as a Luminosity Indicator in M31*. AAS 217; Jan. 2011; 153.16

**CO-AUTHOR
POSTERS**

16 to date, see [ORCID publications on ADS](#).