

John F. Wu

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EDUCATION

Ph.D. in Physics and Astronomy <i>Rutgers, The State University of New Jersey</i>	Piscataway, NJ 2013 – 2019
B.Sc. in Physics/Astrophysics, with MCS Honors <i>Carnegie Mellon University</i>	Pittsburgh, PA 2009 – 2013

APPOINTMENTS

Assistant Astronomer <i>Space Telescope Science Institute</i>	Baltimore, MD 2022 – Present
Associate Research Scientist <i>Center for Astrophysical Sciences, Johns Hopkins University</i>	Baltimore, MD 2022 – Present
Postdoctoral Researcher <i>Space Telescope Science Institute</i> <i>Center for Astrophysical Sciences, Johns Hopkins University</i>	Baltimore, MD 2020 – 2021 2019 – 2020
Graduate Research Assistant <i>Rutgers, The State University of New Jersey</i>	Piscataway, NJ 2013 – 2019
Undergraduate Research Assistant <i>McWilliams Center for Cosmology, Carnegie Mellon University</i>	Pittsburgh, PA 2012 – 2013
Research Intern <i>Carnegie Mellon University CyLab</i>	Pittsburgh, PA 2011

PROFESSIONAL MEMBERSHIPS

American Astronomical Society	2015 – Present
International Astronomical Union	2021 – Present

GRANTS AND AWARDS

STScI, <i>Director's Discretionary Research Funding</i> , \$68,110	2022
Google, <i>GCP Research Credits Program</i> , \$5,000	2019
Rutgers, <i>Robert A. Schommer Prize</i> , \$500	2018
USAID, <i>Research and Innovation Fellowship</i> , \$11,636	2016
Rutgers, <i>Special Study Award</i> , \$1,350	2014
Rutgers, <i>Claud Lovelace Graduate Fellowship</i> & <i>Excellence Fellowship Supplement</i> , \$1,000	2013
CMU, <i>Senior Leadership Recognition</i>	2013

ADVISING AND MENTORSHIP

Primary advisor, <i>Mikael Yunus (JHU/Research rotation)</i>	2023 – Present
Primary advisor, <i>Harish Krishnakumar (Tesla STEM High School)</i>	2022 – 2023
Primary advisor, <i>Phani Velicheti (Arizona/STScI Space Astronomy Summer Program)</i>	2022
Primary advisor, <i>Ziting Guo (Yale-NUS/Undergraduate capstone project)</i>	2021 – 2022
Mentor, <i>Kamonte Johnson (Frostburg State University/CollegeBound Foundation)</i>	2020 – 2022
Co-advisor, <i>Antoine Washington (Rutgers University/Undergraduate senior thesis)</i>	2017 – 2020
Co-advisor, <i>Marcell Howard (Case Western Reserve University/REU)</i>	2018
Co-advisor, <i>Manuel Perez III (University of Redlands/REU)</i>	2017

SERVICE

Journal Reviewer for <i>AJ</i> (2021–), <i>ApJ</i> (2020–), <i>A&A</i> (2019–), <i>MNRAS</i> (2020–), and <i>PNAS</i> (2021–)	
Machine Learning conference/workshop paper reviewer for <i>NeurIPS</i> (2021–), <i>ICML</i> (2023–)	
Guest Editor, <i>Annual Reviews of Astronomy and Astrophysics (ARA&A Vol. 63)</i>	2023
Program Coordinator & Diversity Lead, <i>KITP Program - galevo23</i>	2023
Founder/Organizer, <i>STScI Machine Learning Reading Group (MLRG)</i>	2022 – Present
Member, <i>NRAO Science Review Panel (SRP)</i>	2022 – Present
Member, <i>NOIRLab Data Science Advisory Group (DSAG)</i>	2022 – Present
Coordinator, <i>STScI Science Staff Retreat</i>	2022
Leveler, <i>JWST Cycle 1 Panel</i>	2021
Co-organizer, <i>Low Density Universe (LDU) Meetings</i>	2020 – 2021
STScI Liason, <i>JHU Physics and Astronomy Postdocs + Research Scientists</i>	2020
Session Chair, <i>AAS 236 ISM-BIG meeting-in-meeting</i>	2020
Co-organizer, <i>JHU CAS Astro Coffee</i>	2020
Co-organizer, <i>Rutgers Gaia DR2 Hackathon</i>	2018
Co-organizer, <i>Rutgers SPS/RAS Astro Hack Sessions</i>	2018
Webmaster, <i>Rutgers Physics GSO and SSPAR</i>	2014 – 2017
Time Allocation Committee, <i>SALT 2015-2 Rutgers TAC</i>	2015
Local Organizing Committee, <i>2015 PHISCC Workshop</i>	2015
Organizer, <i>Student Seminars in Physics and Astronomy at Rutgers (SSPAR)</i>	2014 – 2015
Vice President, <i>Rutgers Physics Graduate Student Organization (GSO)</i>	2014 – 2015

TEACHING AND OUTREACH

Speaker, <i>Astronomy on Tap, Baltimore</i>	2023
Podcast Guest Speaker, <i>Times Higher Education (THE) Campus Podcast</i>	2022
Guest Speaker, <i>Marymount School of New York, Independent Science Research</i>	2021
Teaching Assistant, <i>STScI ML Office Hours</i>	2021
Guest Lecturer, <i>Rutgers Byrne Seminar: The Poetry of Astronomy</i>	2016, 2019
Certificate, <i>Seminar In Graduate Mentoring in Astronomy and Physics (SIGMA-P)</i>	2018
Plenary Talk, <i>Friends of Rutgers Astronomy</i>	2017
Leadership Team, <i>Parsons Community Outreach</i>	2015 – 2016
Volunteer, <i>Parsons Community Outreach</i>	2013 – 2016
Teaching Assistant, <i>Rutgers 343: Observational Radio Astronomy</i>	2015
Public Talk, <i>Rutgers Astronomical Society</i>	2014
Certificate, <i>Developing Educational Leaders among TAs in Physics (DELTA-P)</i>	2013

SEMINARS AND TALKS (†INVITED)

Poster, <i>ICML, Machine Learning for Astrophysics</i>	(scheduled) 2023
Talk, <i>STScI, Roman Science Inspired by Emerging JWST Results</i>	2023
Poster, <i>Flatiron CCA, Cosmic Connections Symposium</i>	2023
Talk, <i>KITP, Galaxy Formation and Evolution in the Data Science Era</i>	2023
†Seminar, <i>University of Helsinki Astrophysics Seminar (virtual)</i>	2022
†Seminar, <i>Carnegie Observatories Lunch Talks</i>	2022
†Seminar, <i>UMBC Astrophysics Seminar</i>	2022
†Special Talk, <i>STScI</i>	2021
Talk, <i>JHU/STScI HotSci Series</i>	2021
†Seminar, <i>Université de Montréal, Astrophysics Seminar (virtual)</i>	2021
†Seminar, <i>University of Toronto, Statistics and Machine Learning Journal Club (virtual)</i>	2021
†Seminar, <i>Western Sydney University, Machine Learning in Astronomy</i>	2021
Seminar, <i>Space Telescope Science Institute, Galaxies Journal Club</i>	2021
†Seminar, <i>Fermilab, Cosmic Physics Center Seminar (virtual)</i>	2021
Poster, <i>NeurIPS, Machine Learning for the Physical Sciences workshop (virtual)</i>	2020
†Talk, <i>NCSA – Accelerated Artificial Intelligence for Big-Data Experiments (virtual)</i>	2020
Seminar, <i>NOIRLab, Flash Seminar (virtual)</i>	2020
†Seminar, <i>Wayne State University, Particle/Astro/Nuclear Physics Seminar (virtual)</i>	2020
†Talk, <i>The ISM in the Era of Big Data (AAS 236, virtual)</i>	2020
Talk, <i>JHU Astro Coffee</i>	2020
†Talk, <i>Astronomers Turned Data Scientists Meeting (AAS 235)</i>	2020
Poster, <i>AAS 235th Meeting</i>	2020
Seminar, <i>STScI, Science Coffee Seminar</i>	2019
Seminar, <i>JHU, CAS Wine & Cheese Seminar</i>	2019
†Deep learning workshop, <i>MIAPP – Galaxy Evolution in a New Era of HI Surveys</i>	2019
Talk, <i>ESO – Nine Billion Years of Gas Evolution</i>	2019
†Seminar, <i>Rutgers Statistics, Foundations of Probability Seminar</i>	2019
Dissertation talk, <i>AAS 233rd Meeting</i>	2019
Seminar, <i>Princeton, Galread Seminar</i>	2018
Seminar, <i>Princeton, Data Science/COMPASS Seminar</i>	2018
Seminar, <i>University of Cape Town, Lunch Seminar</i>	2018
Poster, <i>École Normale Supérieure – Galaxy Evolution Across Time</i>	2017
Talk, <i>Princeton-Rutgers Extragalactic Science Day</i>	2016
Talk, <i>AAS 227th Meeting</i>	2016
Seminar, <i>Australian Astronomical Observatory, Colloquium</i>	2015

WORKSHOPS AND OTHER EXPERIENCE

Kavli Institute of Theoretical Physics <i>Building a Physical Understanding of Galaxy Evolution with Data-driven Astronomy</i>	Santa Barbara, CA 2023
Pascal Institute <i>The Self-Organized Star Formation Process</i>	Paris, France Sept 2019
MIAPP Topical Workshop <i>Nine Billion Years of Gas Evolution</i>	Munich, Germany July 2019
USAID Research & Innovation Fellow <i>Improving the LADUMA Pipeline Using MeerKAT Early Science Data</i>	Cape Town, South Africa Sept – Nov 2016
SKA Pathfinders HI Science Coordination Committee <i>2015 PHISCC Workshop: HI Surveys Get Real</i>	Piscataway, NJ Mar 2015
Vatican Observatory Summer School <i>Galaxies, Near and Far, Young and Old</i>	Castel Gandolfo, Italy June 2014
NRAO Synthesis Imaging Workshop <i>14th Synthesis Imaging Workshop</i>	Socorro, NM May 2014

PROFESSIONAL COLLABORATIONS

4MOST Wide Area Vista Extragalactic Survey (WAVES/ORCHIDSS): *Member*
ALMA Lensing Cluster Survey (ALCS): *Member*
Dark Energy Spectroscopic Instrument (DESI): *External Collaborator (LOWZ Program)*
DECam Local Volume Exploration (DELVE): *WIDE Survey WG Member*
Deep Skies Lab: *Contributor*
LADUMA: *Pipeline & Calibration WG, Source-finding WG, and Ancillary Data WG Member*
LSST Galaxies Science Collaboration: *Member*

TELESCOPE OBSERVING PROPOSALS

Atacama Large Millimeter/submillimeter Array (ALMA)
PI, *one proposal (9.4 hrs – partially observed in Cycle 7)* Cycles 7, 8
CoI, *four proposals (120.9 hrs)* Cycles 2, 6, 7, 8
Gemini South/Flamingo2
CoI, *Fast Turnaround (5.8 hrs)* 2021B
Very Large Array (VLA)
CoI, *19A-433 (10 hrs)* 2019A
Anglo-Australian Telescope (AAT)
CoI, *N0331 (5 nights), N0334 (4 nights)* 2015, 2017
Southern African Large Telescope (SALT)
PI, *2016-1-SCI-040 (3.9 hrs), 2015-2-SCI-052 (3.9 hrs), DDT (1.6 hrs)* 2015-1 — 2016-1
CoI, *2017-1-MLT-014 (11.3 hrs), 2016-2-SCI-051 (20.4 hrs),* 2016-2 — 2017-1

John F. Wu — Publication List

Names of students for whom I am the primary supervisor are underlined. For an up-to-date list of my publications, please see my [ADS Library](#) or my [ORCID](#).

JOURNAL ARTICLES – FIRST AUTHOR AND MAJOR CONTRIBUTIONS

12. *Quantifying Roman WFI Dark Images with the Wavelet Scattering Transform*
Velicheti, P. D., **Wu, J. F.**, Petric, A. O., 2023, *PASP*, submitted.
11. *Identification of galaxy shreds in large photometric catalogs using Convolutional Neural Networks*
Di Teodoro, E. M., Peek, J. E. G., **Wu, J. F.**, 2023, *AJ*, 165, 123.
10. *Target Selection and Sample Characterization for the DESI LOW-Z Secondary Target Program*
Darragh-Ford, E., **Wu, J. F.**, Mao, Y.-Y., Wechsler, R. H., et al. 2022, *ApJ*, submitted.
9. *Identification of Galaxy-Galaxy Strong Lens Candidates in the DECam Local Volume Exploration Survey Using Machine Learning*
Zaborowski, E., Drlica-Wagner, A., Ashmead, F., **Wu, J. F.**, et al., 2022, arXiv:2210.10802.
8. *A Machine Learning Approach to Enhancing eROSITA Observations*
Soltis, J., Ntampaka, M., **Wu, J. F.**, et al., 2022, *ApJ*, 940, 60.
7. *Extending the SAGA Survey (xSAGA). I. Satellite Radial Profiles as a Function of Host-galaxy Properties*
Wu, J. F., Peek, J. E. G., Tollerud, E. J., et al, 2022, *ApJ*, 927, 121.
6. *Predicting the Spectrum of UGC 2885, Rubin’s Galaxy with Machine Learning*
Holwerda, B. W., **Wu, J. F.**, Keel, W. C., Young, J., et al., 2021, *ApJ*, 914, 142.
5. *Connecting Optical Morphology, Environment, and HI Mass Fraction for Low-Redshift Galaxies Using Deep Learning*
Wu, J. F., 2020, *ApJ*, 900, 148.
4. *The Star-Forming Interstellar Medium of Lyman Break Galaxy Analogs*
Wu, J. F., Baker, A. J., Heckman, T. M., et al., 2019, *ApJ*, 887, 251.
3. *Using convolutional neural networks to predict galaxy metallicity from three-colour images*
Wu, J. F., Boada, S., 2019, *MNRAS*, 484, 4683.
2. *Herschel and ALMA Observations of Massive SZE-selected Clusters*
Wu, J. F., Aguirre, P., Baker, A. J., et al., 2018, *ApJ*, 853, 195.
1. *Galaxy Candidates at $z \sim 10$ in Archival Data from the Brightest of Reionizing Galaxies (BORG[z8]) Survey*
Bernard, S. R., Carrasco, D., Trenti, M., Oesch, P. A., **Wu, J. F.**, et al., 2016, *ApJ*, 827, 76.

PEER-REVIEWED MACHINE LEARNING PAPERS

3. *Learning the galaxy-environment connection with graph neural networks*
Wu, J. F., Kragh Jespersen, C., 2023, *ICML: ML4astro workshop*, accepted, arXiv:2306.12327.
2. *Identifying AGN host galaxies with convolutional neural networks*
Guo, Z., **Wu, J. F.**, Sharon, C. E., 2022, *NeurIPS: ML4PS workshop*, 63, arXiv:2212.07881.
1. *Predicting galaxy spectra from images with hybrid convolutional neural networks*
Wu, J. F., Peek, J. E. G., 2020, *NeurIPS: ML4PS workshop*, 3, arXiv:2009.12318.

JOURNAL ARTICLES - SURVEYS AND COLLABORATIONS

6. *JWST constraints on the UV luminosity density at cosmic dawn: implications for 21-cm cosmology*
Hassan, S., Lovell, C. C., Madau, P., et al. 2023, arXiv:2305.02703.
5. *A variable active galactic nucleus at $z = 2.06$ triply-imaged by the galaxy cluster MACS J0035.4-2015*
Furtak, L., Mainali, R., Zitrin, A., et al. 2023, *MNRAS*, 522, 5142.
4. *The DECam Local Volume Exploration Survey Data Release 2*
Drlica-Wagner, A., Ferguson, P. S., Adamów, M., et al. 2022, *ApJS*, 261, 38.
3. *LADUMA: The First Untargeted Detection of an OH Megamaser at $z > 0.5$*
Glowacki, M., Collier, J. D., Kazemi-Moridani, A., et al., 2022, *ApJL*, 931, 7.
2. *The DECam Local Volume Exploration Survey: Overview and First Data Release*
Drlica-Wagner, A., Carlin, J. L., Nidever, D. L., et al., 2021, *ApJS*, 256, 2.
1. *ALMA Lensing Cluster Survey: an ALMA galaxy signposting a MUSE galaxy group at $z=4.3$ behind “El Gordo”*
Caputi, K. I., Caminha, G. B., Fujimoto, S., et al., 2021, *ApJ*, 908, 146.

POPULAR SCIENCE AND OTHER

1. *Effective use of machine learning to empower your research*
Wu, J. F., 2022, *Times Higher Education – Campus*, Feature Article.

UNREFEREED CONFERENCE PAPERS AND WHITE PAPERS

6. *NANCY: Next-generation All-sky Near-infrared Community survey Y*
Han, J. J. ; Dey, A. ; Price-Whelan, A. M. et al., 2023, *Roman Core Community Survey White Papers*.
5. *Optical, Radio Continuum and HI Deep Spectroscopic Survey (ORCHIDSS)*
Duncan, K., Baker, A., Best, P., et al., *The Messenger*, 190, 25.
4. *Roman Ultra Deep Field*
Koekemoer, A. M. et al. 2021, *Roman Early-Definition Astrophysics Survey Opportunity*.
3. *Obscured AGN – Hiding High Growth at the Cosmic Noon*
Petric, A. et al. 2021, *Roman Early-Definition Astrophysics Survey Opportunity*.

2. *Herschel And ALMA Observations Of The ISM In Massive High-Redshift Galaxy Clusters*
Wu, J. F. et al. 2017, *Galaxy Evolution Across Time*, 51.
1. *LADUMA: Looking at the Distant Universe with the MeerKAT Array*
Blyth, S. et al. 2016, *Proceedings of MeerKAT Science: On the Pathway to the SKA*, 4.