

SOPHIA R FLURY
Curriculum Vitae

University of Edinburgh
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EDUCATION

Ph.D.	Astronomy	2024	University of Massachusetts, Amherst, MA advisor: Anne Jaskot dissertation: "Clearing the Path to Cosmic Reionization"
M.S.	Astronomy	2023	University of Massachusetts, Amherst, MA advisor: Anne Jaskot thesis: "New Insights into Lyman Continuum Escape"
M.A.	Astronomy	2018	Wesleyan University, Middletown, CT advisor: Ed Moran thesis: "Unmixing and Diluting Emission-line Cocktails in the Local Universe"
B.S. (cum laude)	Physics(hons)	2012	Dickinson College, Carlisle, PA advisor: Catrina Hamilton, Margaret Trippie (UMD-CP) thesis: "X-ray and Optical Properties of <i>Swift</i> /BAT AGN"

RESEARCH APPOINTMENTS

University of Edinburgh	PostDoctoral Research Asst	08/2024 - 07/2026 (exp)
UMass Amherst	NASA FINESST award	09/2023 - 08/2024
	<i>HST</i> /COS - LzLCS	01/2020 - 09/2023
Wellesley College	RSS Pipeline Developer	09/2018 - 05/2019

TEACHING APPOINTMENTS

UMass Amherst	ASTR 101: Intro Astronomy	08/2019 - 12/2019
Wesleyan University	ASTR 111: Dark Side of the Universe	01/2017 - 05/2018
	ASTR 211: Observational Astronomy	
	Numerical Methods	05/2018 - 08/2018
Dickinson College	Undergraduate Lab Assistant	08/2009 - 05/2012

FUNDING AWARDS

<i>JWST</i> GO 5554	2024	\$ 250,000
NASA/FINESST Grant	2023	\$ 100,000
MSGC Fellowships	2023	\$ 8,500

RESEARCH SPECIALIZATION AND INTERESTS

Multiwavelength spectroscopy — rest optical, UV, IR spectroscopic observations of galaxies

Galaxies — ionization, gas geometry, stellar populations, feedback and outflows, active galactic nuclei, chemical abundances, Lyman continuum escape

ISM gas — emission and absorption lines, outflow kinematics, excitation, nebular properties and diagnostics, geometry, ionization structure, BPT-style diagnostics

Stellar populations — ages, feedback, spectroscopic features, ionizing SEDs and ionizing photon budgets, synthetic stellar populations including BPASS and SB99

Extreme ionization sources — shocks, active galactic nuclei, UV excess, high ionization lines

TECHNICAL SKILLS

Programming — python, R, C, C#, SQL, fortran; object-oriented, documentation (sphinx, markdown, HTML, CSS, etc), GitHub (github.com/sflury), PyPI

Science programming and data analysis — numerical methods, statistics (including multivariate methods, treatment of upper limits, faint/weak signals, and non-Gaussian variates), regression (including MCMC, TLS and EIV, proportional hazards, and generalized linear models), time series (including periodograms, FTs, spectrograms, wavelets, autocorrelations, entropy and complexity)

Software packages — OutLines (developer), PyNeb, MAPPINGS, CLOUDY, calcos, FaintCOS, emcee, numpy, scipy, matplotlib, astropy, pandas, survival, lifelines, tidyverse, lightkurve, XSPEC, sherpa, CIAO, vorbin, ppxf

Observing facilities — *HST*/COS, *JWST*/MIRI, WHT/WEAVE, VISTA/4MOST, Gemini/GMOS, Keck/HIRES, *XMM*/EPIC-pn, *Cassini*/RSR, *Voyager*/RSR

— IFU, long slit, echelle, fiber/aperture spectroscopy

PRESENTATIONS / COLLOQUIA / INTERVIEWS

Lyman Continuum Labyrinths	Spring 2025	contributing talk
Cambridge University	Spring 2025	journal club
WEAVE/4MOST Conference	Winter 2024	contributing talk
SUPA Cormack Meeting	Winter 2024	contributing talk
St. Andrews University	Fall 2024	lunch talk
IfA - DAWN JWST Workshop	Summer 2024	contributing talk
CAGN IV	Spring 2024	contributing talk
STScI Spring Symposium	Spring 2024	poster
STScI	Fall 2023	journal club
Oxford University	Fall 2023	journal club
University of Hull	Fall 2023	journal club
University of Edinburgh IfA	Fall 2023	coffee talk
IfA - DAWN JWST Workshop	Fall 2023	contributing talk
University of Edinburgh IfA	Fall 2023	journal club
Johns Hopkins University	Fall 2023	coffee talk
University Cidade de São Paulo	Summer 2023	colloquium
UVGalaxies2023	Summer 2023	contributing talk
First Light with JWST	Spring 2023	poster

Lyman Continuum Labyrinths	Spring 2023	contributing talk
AAS Journal Author Series	Summer 2022	interview
Sazerac SIP Early Galaxy Formation	Fall 2021	contributing talk
Sazerac 2.0	Summer 2021	contributing talk
CAGN III	Spring 2021	contributing talk

PREVIOUS ADVISEES

Miriam Eleazer	Wesleyan University	Masters thesis, MA
Alaina Einsig	Wesleyan University	Masters thesis, MA
Murdo Livingston	University of Edinburgh	senior honors thesis

PROFESSIONAL/INSTITUTIONAL SERVICE

UEdinburgh SOPA DEI	IfA Representative/Contributor	2024 - present
HWO Working Groups	Contributing Scientist	2024 - present
	iphotons, CGM/IGM, AGN, chemical evolution, stars and stellar pops	
4MOST Working Groups	Contributing Scientist	2024-present
	pipeline dev	
WHT TAC	Reviewer	2024
CAGN IV	SOC member	2024
A&A	Referee	2023 - present
ApJ	Referee	2022 - present
Wesleyan University	Bridge program mentor	2021 - 2024
LMT TAC	facilitator	2021
Wesleyan University	Public Observing	2017 - 2018
Macdonough Elem, CT	Planetarium Shows	2017
Wesleyan University	Public science talks	2017 - 2018
Dickinson College	Founded and ran public science activity fair	2010 - 2012

FIRST-AUTHOR PUBLICATIONS — 273 CITATIONS

- Flury, S. R.**, Jaskot, A. E., Saldana-Lopez, A. et al. 2024. ApJ sub. “The Low-Redshift Lyman Continuum Survey: The Roles of Stellar Feedback and ISM Geometry in LyC Escape” 2024arXiv240912118F
- Flury, S. R.**, Arellano-Cordova, K. Z., Moran, E. C., & Einsig, A.[†] 2024. MNRAS sub. “The Shocking Nitrogen Excess at High Redshift” 2024arXiv
- Flury, S. R.**, Dors, O. L., & Riffel, R. A. 2024. MNRAS sub. “Empirical Calibration of AGN Temperature Structure” 2024arXiv
- Flury, S. R.**, Moran, E. C., & Eleazer, M.[†], 2023, MNRAS 525, 4231. “Galactic Outflow Emission Line Profiles: Evidence for Dusty, Radiatively-Driven Ionized Winds in Mrk 462”.
- Flury, S. R.**, Jaskot, A. E., Ferguson, H. C., et al. 2022, ApJS, 260, 1. “The Low-redshift Lyman Continuum Survey. I. New, Diverse Local Lyman Continuum Emitters”.
- Flury, S. R.**, Jaskot, A. E., Ferguson, H. C., et al. 2022, ApJ, 930, 126. “The Low-redshift Lyman Continuum Survey. II. New Insights into LyC Diagnostics”.

Flury, S. R., & Moran, E. C. 2020, MNRAS, 496, 2191. “Chemical abundances in active galaxies”.

CO-AUTHOR PUBLICATIONS — 426 CITATIONS

- Amorín, R. O. , Rodríguez-Henríquez, M., Fernández, V., Vílchez, J. M., Marques-Chaves, R., Schaerer, D., Izotov, Y. I., Firpo, V., Guseva, N., Jaskot, A. E., Komarova, L., Muñoz-Vergara, D., Oey, M. S., Bait, O., Carr, C., Chisholm, J., Ferguson, H., **Flury, S. R.**, et al. 2024. A&A 682, 25. “Ubiquitous broad line emission and the relation between ionized gas outflows and Lyman continuum escape in Green Pea galaxies”.
- Bait, O., Borthakur, S., Schaerer, D., Momjian, E., Sebastian, B., Saldana-Lopez, A., **Flury, S. R.**, et al. 2024, A&A 688, 198. “The Low-redshift Lyman Continuum Survey: Radio continuum properties of low- z Lyman continuum emitters”.
- Dors, O. L., Cardaci, M. V., Hägele, G. F., Valerdi, M., Ilha, G. S., Oliveira, C. B., Riffel, R. A., **Flury, S. R.**, et al. MNRAS 534, 30. “Direct estimates of nitrogen abundance for Seyfert 2 nuclei”
- Dors, O. L., Arellano-Cordova, K. Z., **Flury, S. R.**, et al. 2024. MNRAS 533, 1. “Empirical calibration for helium abundance determinations in Active Galactic Nuclei”
- Duncan, K. J., McLeod, D. J., Best, P. N., Pirie, C. A., Clausen, M., Cochrane, R. K., Dunlop, J. S., **Flury, S. R.**, et al. MNRAS subm. “The JWST Emission Line Survey (JELS): Extending rest-optical narrow-band emission line selection into the Epoch of Reionization” 2024arXiv241009000D
- Carr, C, Cen, R, Scarlata, C, Marques-Chaves, R, Chave, C, Xu, X, Amorin, R, Schaerer, D, Henry, A, **Flury, S. R.**, et al. 2024. ApJ subm. “The Impact of Massive Outflows on Lyman Continuum Escape from Local Starbursts” 2024arXiv240905180C
- Chisholm, J., Berg, D. A., Endsley, R., Gazagnes, S., Richardson, C. T., Lambrides, E., Greene, J., Finkelstein, S., **Flury, S. R.**, et al. 2024. MNRAS 534, 26. “[Ne v] emission from a faint epoch of reionization-era galaxy: evidence for a narrow-line intermediate mass black hole”
- Cullen, F., McLeod, D. J., McLure, R. J., Dunlop, J. S., Donnan, C. T., Carnall, A. C., Keating, L. C., Magee, D., Arellano-Cordova, K. Z., Bowler, R. A. A., Begley, R., **Flury, S. R.**, Hamadouche, M. L., and Stanton, T. M. 2024, MNRAS 531, 997. “Evidence for the emergence of dust-free stellar populations at $z > 10$ ”.
- Gazagnes, S., Chisholm, J., Endsley, R., Berg, D. A., Leclercq, F., Jurlin, N., Saldana-Lopez, A., Finkelstein, S. L., **Flury, S. R.** et al. MNRAS submitted. “A negligible contribution of two luminous $z \sim 7.5$ galaxies to the ionizing photon budget of reionization”.
- Heintz, K. E., Brammer, G. B., Watson, D., Oesch, P. A., Keating, L. C., Hayes, M. J., Abdurro'uf, Arellano-Córdova, K. Z., Carnall, A. C., Christiansen, C. R., Cullen, F., Davé, R., Dayal, P., Ferrara, A., Finlator, K., Fynbo, J. P. U., **Flury, S. R.**, et al. A&A submitted. “The JWST-PRIMAL Legacy Survey. A JWST/NIRSpec reference sample for the physical properties and Lyman- α absorption and emission of ~ 500 galaxies at $z=5.5\text{--}13.4$ ”.
- Leclercq, F., Chisholm, J., King, W., Zeimann, G., Jaskot, A. E., Henry, A., Hayes, M., **Flury, S. R.**, et al. 2024. A&A 678, 73. “Linking Mg ii and [O ii] spatial distribution to ionizing photon escape in confirmed LyC leakers and non-leakers”.

- Jaskot, A. E., Silveyra, A. C., Piantinga, A., **Flury, S. R.**, et al. 2024a. ApJ 972, 92. "Multivariate Predictors of LyC Escape I: A Survival Analysis of the Low-redshift Lyman Continuum Survey"
- Jaskot, A. E., Silveyra, A. C., Piantinga, A., **Flury, S. R.**, et al. 2024b. ApJ 973, 111. "Multivariate Predictors of LyC Escape II: Predicting LyC Escape Fractions for High-Redshift Galaxies"
- Jennings, R. M., Henry, A., Mauerhofer, V., Gazagnes, S., Heckman, T., Scarlata, C., Carr, C., Xu, X., Jaskot, A. E., Blaizot, J., Verhamme, A., **Flury, S. R.**, et al. 2024. ApJ submitted. "A Simulated Galaxy Laboratory: Exploring the Observational Effects on UV Spectral Absorption Line Measurements".
- Pirie, C. A., Best, P. N., Duncan, K. J., McLeod, D. J., Cochrane, R. K., Clausen, M., Dunlop, J. S., **Flury, S. R.**, et al. MNRAS subm. "The JWST Emission Line Survey (JELS): An untargeted search for H α emission line galaxies at $z > 6$ and their physical properties" 2024arXiv241011808P
- Roy, N., Heckman, T., Henry, A., Chisholm, J., **Flury, S. R.**, et al. ApJ subm. "Lyman Continuum leakage from massive leaky starbursts: A different class of emitters?" 2024arXiv241013254R
- Dors, O. L., Valerdi, M., Riffel, R. A., Riffel, R., Cardaci, M. V., Hägele, G. F., Armah, M., Revalski, M., **Flury, S. R.**, Freitas-Lemes, P., Amôres, E. B., Krabbe, A. C., Binette, L., Feltre, A., 2023, MNRAS, 521, 1969. "Chemical abundances in Seyfert galaxies – X. Sulfur abundance estimates".
- French, R. G., Nicholson, P. D., McGhee-French, C. A., Longaretti, P.-Y., Hedman, M. M., Colwell, J., Marouf, E. A., Rappaport, N., **Flury, S. R.**, et al. 2023, Icarus 405, 115678. "The complex shape of the outer edge of Saturn's B ring, as observed in Cassini occultation data".
- Trebitsch, M., Dayal, P., Chisholm, J., Finkelstein, S. L., Jaskot, A., **Flury, S. R.**, et al. 2023, A&A submitted. "Reionization with star-forming galaxies: insights from the Low- z Lyman Continuum Survey".
- Nicholson, P. D., French, R. G., McGhee-French, C. A., Longaretti, P.-Y., Hedman, M., El Moutamid, M., Colwell, J., Marouf, E. A., Rappaport, N., **Flury, S. R.**, et al. 2023, Icarus, 390, 115287. "The seven-lobed shape of the outer edge of Saturn's A ring".
- Chisholm, J., Saldana-Lopez, A., **Flury, S. R.**, et al. 2022, MNRAS, 517, 5104. "The far-ultraviolet continuum slope as a Lyman Continuum escape estimator at high redshift".
- Marques-Chaves, R., Schaerer, D., Amorin, R. O., Borthakur, S., Chisholm, J., Ferguson, H., **Flury, S. R.**, et al. 2022, A&A, 663, L1. "No correlation of the Lyman continuum escape fraction with spectral hardness".
- Saldana-Lopez, A., Schaerer, D., Chisholm, J., **Flury, S. R.**, et al. 2022, A&A, 663, A59. "The Low-Redshift Lyman Continuum Survey. Unveiling the ISM properties of low- z Lyman-continuum emitters".
- Xu, X., Henry, A., Heckman, T., Chisholm, J., Worseck, G., Gronke, M., Jaskot, A., McCandliss, S. R., **Flury, S. R.**, et al. 2022, ApJ, 933, 202. "Tracing Ly α and LyC Escape in Galaxies with Mg II Emission". Wang, B., Heckman, T. M., Amorín, R., Borthakur, S., Chisholm, J., Ferguson, H., **Flury, S. R.**, et al. 2021, ApJ, 916, 3. "The Low-redshift Lyman-continuum Survey: [S II] Deficiency and the Leakage of Ionizing Radiation".