SOPHIA R FLURY
Curriculum Vitae

Royal Observatory
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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 including P-Cygni profiles and photospheric lines, 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
Activity in low-mass stars — stellar structure, dynamos, activity metrics

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 Trippe (UMD-CP)		
	thesis: “X-ray and Optical Properties of *Swift*/BAT AGN”		

RESEARCH APPOINTMENTS

University of Edinburgh	PostDoctoral Research Asst	08/2024 - 07/2026 (exp)
UMass Amherst	NASA FINESST award	09/2023 - 08/2024
	HST/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

TECHNICAL SKILLS

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

Science programming and data analysis — numerical methods, statistics (including multivariate methods like PCA, 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 — STARBURST99, 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, Gemini/GMOS, Keck/HIRES, *XMM*/EPIC-pn, *Cassini*/RSR, *Voyager*/RSR
— IFU, long slit, echelle, fiber/aperture spectroscopy

FUNDING AWARDS

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

PRESENTATIONS / COLLOQUIA / INTERVIEWS

WEAVE/4MOST Conference	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

PROFESSIONAL/INSTITUTIONAL SERVICE

HWO Sci Working Groups	Contributing Scientist iphotons, CGM/IGM, AGN, chemical evolution, stars and stellar pops	2024
CAGN IV	SOC member	2024
A&A	Referee	2023 - present
ApJ	Referee	2022 - present
Wesleyan University	Bridge program mentor	2021 - 2023
UMass	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

REFEREED PUBLICATIONS

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 accepted. “Direct estimates of nitrogen abundance for Seyfert 2 nuclei”

Dors, O. L., Arellano-Cordova, K. Z., **Flury, S. R.**, et al. 2024. ApJL accepted. “Empirical calibration for helium abundance determinations in Active Galactic Nuclei”

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 in prep. “The Impact of Massive Outflows on Lyman Continuum Escape from Local Starbursts”

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 submitted. “[Ne v] emission from a faint epoch of reionization-era galaxy: evidence for a narrow-line intermediate mass black hole”

Leclercq, F., Chisholm, J., King, W., Zeimann, G., Jaskot, A. E., Henry, A., Hayes, M., **Flury, S. R.**, et al. 2024. A&A submitted. "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 accepted. “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 accepted. “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".

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 submitted. “The Low-redshift Lyman Continuum Survey: Radio continuum properties of low- z Lyman continuum emitters”.

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”.

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”.

Flury, S. R., Moran, E. C., & Eleazer, M.[1], 2023, MNRAS 525, 4231. “Galactic Outflow Emission Line Profiles: Evidence for Dusty, Radiatively-Driven Ionized Winds in Mrk 462”.

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&AL 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”.

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”.

[1] Master’s student advisee

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”.

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 Lyα 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”.

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