Lucie E. Rowland

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Education

Leiden Observatory, PhD in Astronomy — Sept 2022 – ongoing

Durham University, MPhys in Physics & Astronomy, **First Class Honours** — Sept 2018 – July 2022

Research Experience

PhD Thesis, Leiden Observatory — Sept 2022 – ongoing

- Thesis: "Characterising massive star-forming galaxies in the Epoch of Reionisation"
- Supervisors: Dr. Rychard Bouwens and Dr. Jacqueline Hodge

Master's Thesis, Durham University — Sept 2021 – July 2022

- Thesis: "Feedback from massive stars in nearby dwarf galaxies"
- Supervisors: Dr. Anna McLeod and Dr. Azadeh Fattahi

Research Intern, Institute of Astronomy, Cambridge University — July 2021 – Sept 2021

- Project: "Detection of warm Jupiters around nearby stars using high-resolution spectroscopy"
- Supervisor: Dr. Mathias Nowak

Publications

First Author

1. **Rowland, Lucie E.**; Heintz, Kasper E.; Algera, Hiddo et al., "REBELS-IFU: Linking damped Lyman-α absorption to [C II] emission and dust content in the EoR", Oct 2025, submitted to A&A, arXiv: 2510.11351
2. **Rowland, Lucie E.**; Stefanon, Mauro; Bouwens, Rychard; et al., "REBELS-IFU: Evidence for metal-rich massive galaxies at z∼6-8", 2025, arXiv:2501.10559, accepted for publication in MNRAS, arXiv:2501.10559
3. **Rowland, Lucie E.**; Hodge, Jacqueline; Bouwens, Rychard; et al., "REBELS-25: Discovery of a dynamically cold disc galaxy at z = 7.31", Dec 2024, MNRAS, 535, 3, pp.2068-2091, 10.1093/mnras/stae2217
4. **Rowland, Lucie E.**; McLeod, Anna F.; Fattahi, Azadeh; et al., "Pre-supernova stellar feedback in nearby starburst dwarf galaxies", May 2024, A&A, 685, id.A46, 18 pp, 10.1051/0004-6361/202348029

Contributing Author

1. Facchini, S.; Hodge, J.; Jørgensen, J; et al. (incl. **Rowland, L. E.**), "Towards ALMA2040: An update from the European community and invitation to contribute", Dec. 2025, eprint arXiv:2512.15652
2. Algera, H. S. B. ; Weaver, J. R. ; Bakx, T. J. L. C.; et al. (incl. **Rowland, L. E.**), "A first systematic study of [OIII]88um at z > 8: two luminous oxygen lines and a powerful ionized outflow in the first 600 million years", Dec. 2025, arXiv:2512.14486, submitted to OJA
3. Algera, H. S. B.; Herrera-Camus, R.; Aravena, M.; et al. (incl. **Rowland, L. E.**), "How much gas and dust is in the z = 5.7 Lyman Break Galaxy HZ10? An ALMA Band 10 to 4 and JWST/NIRSpec study of its interstellar medium", Dec. 2025, arXiv:2512.02320, submitted to A&A
4. Komarova, Lena; Stefanon, Mauro; Laza-Ramos, Andres; et al. (incl. **Rowland, Lucie E.**), "REBELS-IFU: Spatially Resolved Ionizing Photon Production Efficiencies of 12 Bright Galaxies in the Epoch of Reionization", Nov. 2025, arXiv:2511.10743, submitted to ApJ.

5. Fisher, R.; Bowler, R. A. A.; Cochrane, R. K.; **Rowland, L.** et al., "REBELS-IFU: Steeply rising star formation histories and the importance of dust obscuration in massive z $\simeq$ 7 galaxies revealed by multi-wavelength observations", Nov. 2025, arXiv:2511.10741, submitted to MNRAS.
6. Heintz, Kasper E.; Watson, Darach; Valentino, Francesco; et al. (incl. **Rowland, Lucie E.**), "Inefficient dust production in a massive, metal-rich galaxy at z=7.13 uncovered by JWST and ALMA", Oct 2025, OJA, arXiv:2510.07936, submitted
7. Algera, Hiddo; **Rowland, Lucie E.**; Smit, Renske; et al., "REBELS-IFU: on the origin of the elevated [O III]/[C II] ratios in the early Universe", Sept 2025, OJA, arXiv:2509.16071, submitted.
8. Vijayan, Aswin P.; Yates, Robert M.; et al. (incl. **Rowland, Lucie E.**), "Interpreting nebular emission lines in the high-redshift Universe", July 2025, OJA, arXiv:2507.20190, submitted.
9. Schouws, Sander; Bouwens, Rychard; Ormerod, Katherine; et al. (incl. **Rowland, Lucie E.**), "Detection of [O III]88μm in JADES-GS-z14-0 at z = 14.1793", July 2025, ApJ, 988, 1, 19
10. Endsley, Ryan; Shapley, Alice; Topping, Michael W.; et al. (incl. **Rowland, Lucie E.**), "REBELS-MOSFIRE: Weak C III] Emission is Typical Among Extremely UV-bright, Massive Galaxies at z $\sim$ 7", June 2025, ApJ, arXiv:2506.21674, submitted.
11. Pollock, Clara L.; Gottumukkala, Rashmi; Heintz, Kasper E.; et al. (incl. **Rowland, Lucie E.**), "Novel z $\sim$ 10 auroral line measurements extend the gradual offset of the FMR deep into the first Gyr of cosmic time", June 2025, A&A, arXiv:2506.15779, submitted
12. Fisher, Rebecca; Bowler, Rebecca A. A.; Stefanon, Mauro; **Rowland, Lucie E.**; et al., "REBELS-IFU: dust attenuation curves of 12 massive galaxies at z $\sim$ 7", May 2025, MNRAS, 539, 1, pp.109-126.
13. Fudamoto, Yoshinobu; Inoue, Akio K.; Bouwens, Rychard; et al. (incl. **Rowland, Lucie E.**), "ALMA Observations of [O I]145μm and [N II]205μm Emission lines from Star-Forming Galaxies at z $\sim$ 7", Apr 2025, ApJ, arXiv:2504.03831, submitted
14. Schouws, Sander; Bouwens, Rychard; Algera, Hiddo; et al. (incl. **Rowland, Lucie E.**), "Deep Constraints on [C II]158μm in JADES-GS-z14-0: Further Evidence for a Galaxy with Low Gas Content at z=14.2", Feb 2025, ApJ, arXiv:2502.01610, submitted
15. Herard-Demanche, Thomas; Bouwens, Rychard; Oesch, Pascal A.; et al. (incl. **Rowland, Lucie E.**), "Mapping dusty galaxy growth at z > 5 with FRESCO: detection of Hα in submm galaxy HDF850.1 and the surrounding overdense structures", Feb 2025, MNRAS, Volume 537, Issue 2, pp.788-808
16. Algera, Hiddo; **Rowland, Lucie E.**; Stefanon, Mauro; et al., "REBELS-IFU: Dust Build-up in Massive Galaxies at Redshift 7", Jan 2025, MNRAS, arXiv:2501.10508, submitted.
17. van Leeuwen, Ivana F.; Bouwens, Rychard; van der Werf, Paul; et al. (incl. **Rowland, Lucie E.**), "Characterising the contribution of dust-obscured star formation at z$\sim$5 using 18 serendipitously identified [C II] emitters", Nov 2024, MNRAS, 534, 3, pp.2062-2085
18. Algera, Hiddo S. B.; Inami, Hanae; De Looze, Ilse; et al. (incl. **Rowland, Lucie E.**), "Accurate simultaneous constraints on the dust mass, temperature, and emissivity index of a galaxy at redshift 7.31", Sept 2024, MNRAS, 533, 3, pp.3098-3113
19. Maseda, Michael V.; Lewis, Zach; Matthee, Jorryt; et al. (incl. **Rowland, Lucie E.**), "JWST/ NIRSpec Measurements of Extremely Low Metallicities in High Equivalent Width Lyα Emitters", Oct 2023, ApJ, 956, 1, id.11, 11 pp.

Proposals & Observing

Principal Investigator

1. "Too Metal for Their Time", 2025.1.01645.S, ALMA, 18.1 hours
2. "WEAVE-ing the Chemical Story of Local Dwarf Starbursts", SW2025b16, WEAVE LIFU on the William Herschell Telescope, 23.3 hours

Co-Investigator

1. Core member of REBELS ALMA Large Programme, 2019.1.01634.L, 70 hours
2. Core member of PHOENIX ALMA Large Programme, 2025.1.01606.L, 113.5 hours
3. "A Revolutionary Panchromatic View of Early Galaxy Growth via NIRSpec/IFU Observations of 12 Massive z>6.5 Galaxies with ALMA-derived [CII] redshifts", GO-1626, JWST NIRSpec/IFU, 14.1 hours
4. "Resolved dust emission in massive star forming galaxies in the Epoch of Reionization", 2025.1.01318.S, ALMA, 26.3 hours
5. "Directly detecting the multi-phase ISM driving early massive galaxy growth", 2025.1.00638.S, ALMA, 17.5 hours
6. "Confirming Three Hidden ULIRGs in the Epoch of Reionization", 2025.1.00232.S, ALMA, 9.6 hours
7. "Directly detecting cool molecular gas in z>6 star-forming galaxies", 2024.1.00412.S, ALMA, 29.5 hours
8. "Revealing the Lifecycle and Environment of Massive z∼7 Galaxies", GO 6480, JWST NIRCam, 46 hours
9. "JWST+ALMA reveals the earliest-known thin disk galaxy", GO 6036, JWST NIRCam, 7.7 hours

Observing nights

- Remote observing at ASTE, DESHIMA, 4-hour slots over 8 nights, 2024

Data Reduction

- **JWST:** Extensive experience with reducing JWST/NIRSpec IFU data. Contributed to the reduction of the REBELS-IFU (GO-1626) program.
- **ALMA:** Extensive experience with reducing ALMA data, including both continuum and spectral line cubes, using `CASA`.

Talks

Invited

1. *Upcoming:* Lorentz Workshop: From Dust till Dawn, Feb 2026, Leiden, The Netherlands
2. *Upcoming:* Miracles of the early Universe II, Geneva, May 2026
3. *Upcoming:* Nordita workshop, Zoom-in Views of Galaxy Disks Across Cosmic Time: Bridging Simulations and Observations, Stockholm, June 2026
4. UCL Friday Late Afternoon Talks (FLATs), "A Multi-Phase, Resolved View of Massive Galaxies in the Epoch of Reionisation with JWST and ALMA", London, Dec 2025
5. ALMA, JWST, Gaia – the Milky Way connection, "ALMA/JWST discs at z > 7", Paris Observatory, Oct 2025
6. Pan Survey SED Fitting Forum, "Resolved SED fitting at z > 6: insights from the REBELS JWST+ALMA sample", online, July 2025
7. REBELS meeting, 'A multi-wavelength, sub-kpc view of REBELS-25', Valencia, May 2025
8. Lorentz Workshop: Big Galaxies, Big Problems, "REBELS with ALMA & JWST: The build-up of massive galaxies in the early Universe", May 2025, Leiden, The Netherlands
9. NOVA25 Symposium: Celebrating 25 years of NOVA, "Discovery of a dynamically cold disc galaxy at z = 7.31", The Hague, Dec 2024
10. ALMA Science Day, "Discovery of a dynamically cold disc galaxy at z = 7.31", Leiden Observatory, Nov 2024
11. DAWN Cake Talk, "Cosmic titans: JWST and ALMA observations of massive galaxies in the EoR", Copenhagen University, Sept 2024

Contributed

1. High-z kinematics workshop — bringing observations and simulations together, “Rotating discs at high-z with ALMA and JWST" Lund University, Sweden, Oct 2025
2. CRISOL25 conference, “REBELS with ALMA & JWST: The build-up of massive galaxies in the early Universe", Toledo, May 2025
3. First Galaxies conference, “Cosmic Titans: Revealing Early Galaxy Formation with JWST and ALMA Observations of the REBELS Galaxies", Oxford, Apr 2025
4. High redshift galaxy kinematics workshop, MPIA, Heidelberg, Sept 2024
5. IAU 32nd General Assembly, “JWST NIRSpec IFU observations of metal-rich, massive galaxies in the Epoch of Reionisation", Aug 2024
6. EAS Annual Meeting, “JWST NIRSpec IFU observations of metal-rich, massive galaxies in the Epoch of Reionisation”, Padova, July 2024
7. EAS Annual Meeting, “ALMA & JWST reveals the earliest-known rotating disc galaxy”, Padova, July 2024
8. Resolving the Extragalactic Universe with ALMA & JWST, “ALMA + JWST view of massive galaxies at $z \sim 7$: first results from the rebels sample", Tokyo Nov 2023
9. NOVA Network 1 meeting, “Discovery of a dynamically cold rotating disc galaxy at z=7.3", Nov 2023
10. Leiden Observatory Science Day, “Discovery of a dynamically cold disc galaxy at z=7.3", Oct 2023
11. First Light conference, “ALMA+JWST View of Massive Galaxies at $z \sim 7$: First Results for the REBELS sample ", MIT, Boston, June 2023
12. Nederlandse Astronomen Conferentie 2023 (NAC), “Sub-kpc gas kinematics of a massive rotating disk 700 Myr after the Big Bang”, May 2023

Grants

1. Leids Kerkhoven-Bosscha Fonds (LKBF) Grant (600 EUR), subsidy number 25.1.110, May 2025 - Oct 2025
2. ESA Subsidy Grant, (250 EUR), CRISOL25 conference, Toledo, May 2025
3. Grant for public engagement writing at the International Astronomical Union (IAU) General Assembly (350 EUR), Aug 2024
4. LKBF Grant (300 EUR), subsidy number 24.1.075, May 2024 - Oct 2024
5. LKBF Grant (500 EUR), subsidy number 23.1.138, May 2023 - Oct 2023

Teaching & Supervision

Student Supervision

- Supervision of Master student Huson Liang, “Using new JWST data to search for mergers and rotating disk galaxies amongst the brightest star-forming galaxies observed in the first Gyr with ALMA”, Leiden Observatory, Sept 2025 – ongoing
- Co-supervision of Master student Dylan Gavron, “Unveiling the nature of the highest-redshift rotating disk galaxy”, Leiden Observatory, Sept 2025 – ongoing
- Supervision of Master student Joshua Adams, 1st-year Master’s Research Project, “Metallicity Calibrations from Local Analogues to the Early Universe", Leiden Observatory, Sept 2024 – July 2025

Teaching Assistant

- Origin and Evolution of the Universe, Leiden University, Sept 2024 - Feb 2026
- Galaxies & Cosmology, Leiden University, Feb 2023 - June 2024

Service & Outreach

Academic Service

- Referee for ApJ and A&A journal articles
- Chair of Local Organising Committee for 'Scientific Goals and Prospects for ALMA2040', Lorentz Workshop, Leiden Observatory, Nov 2025
- Member of ALMA2040; an ESO Expanding Horizons initiative

Outreach Talks

- Invited 1.5 hour public lecture, "A long time ago, in galaxies far, far away...", Volkssterrenwacht Copernicus, Netherlands, Jan 2026
- Astronomy on Tap, "A long time ago, in galaxies far, far away...", Leiden, Jul 2025
- iTelescope webinar, "Unleashing the Power of JWST & ALMA: Revealing the Mysteries of Galaxies in the Early Universe", Jul 2023
- PhD advice talk, Durham University, Feb 2023

Writing

- Author, featured article in *Zenit*: "Cosmic curiosity: a rotating disk galaxy in the early Universe", Feb 2025
- Regular column writer and editor for *Astrobites*, Jan 2023 – ongoing

Community

- Chair of Social Committee, Leiden Observatory, Sept 2024 – ongoing
- Member of Borrel and PhSki Committees, Leiden Observatory, Aug 2023 – Jan 2024
- PhD Ambassador, Leiden University, Sept 2023 – July 2024
- Board Member of Durham University Women in STEM Society (Bright Network Society of the Year Award, UK, 2022), Sept 2021 – July 2022
- Freshers' Representative, John Snow College, Durham University, July 2023 - June 2024
- Founder & Project Leader, 'Once a Month' volunteering programme, Durham University, July 2020 – July 2022