

Luke Conaboy

Employment

- 2023–present Research Fellow, University of Nottingham, Nottingham, UK
Advisor: Prof James Bolton
- 2022–2023 Research Associate, University of Nottingham, Nottingham, UK
Advisor: Dr Emma Chapman

Education

- 2018–2022 PhD Astronomy, University of Sussex, Brighton, UK
Supervisor: Prof Ilian Iliev
Thesis: Simulations of structure formation and feedback at high redshift
- 2014–2018 MSci Physics with Astronomy, University of Nottingham, Nottingham, UK
Degree classification: First

Publications

I am an author on seven peer-reviewed articles (two as first author) on astrophysics (h -index = 5).

First author

- 2025 *The connection between high-redshift galaxies and Lyman α transmission in the Sherwood-Relics simulations of patchy reionisation*, **Conaboy**, Bolton, Keating, Haehnelt, Kulkarni, Puchwein, MNRAS 539(3)
- 2023 *Relative baryon-dark matter velocities in cosmological zoom simulations*, **Conaboy**, Iliev, Fialkov, Dixon, Sullivan, MNRAS 525(4)

Coauthor

- 2025 *Square Kilometre Array Science Data Challenge 3a: Foreground removal for an EoR experiment*, SKA Data Challenge participants, **Conaboy**, MNRAS 543(2)
- Reionization in HESTIA: Studying reionization in the LG through zoom simulations*, Attard, **Conaboy**, Libeskind, Pillipenko, Dixon, Iliev, arXiv e-prints
- The Thermal Sunyaev-Zel'dovich Effect from the Epoch of Reionization*, Iliev, Hosein, Chluba, **Conaboy**, Attard, Mondal, Ahn, Gottlöber, Lewis, Ocvirk, Park, Shapiro, Sorce, and Yepes, MNRAS 540(2)

How probable is the Lyman- α damping wing in the spectrum of the redshift $z = 5.9896$ quasar ULAS J0148+0600?, Sawyer, Bolton, Becker, **Conaboy**, Haehnelt, Keating, Kulkarni, Puchwein, MNRAS 539(3)

2024 *Reproducibility of machine learning analyses of 21 cm reionization maps*, Sooknunan, Chapman, **Conaboy**, Mortlock, and Pritchard, arXiv e-prints

Dust-UV offsets in high-redshift galaxies in the Cosmic Dawn III simulation, Ocvirk, Lewis, **Conaboy**, Dubois, Bethermin, Sorce, Aubert, Shapiro, Dawoodbhoy, Lee, Teyssier, Yepes, Gottlöber, Iliev, Ahn, and Park, arXiv e-prints (in review)

The Lyman-limit photon mean free path at the end of late reionization in the Sherwood-Relics simulations, Feron, **Conaboy**, Bolton, Chapman, Haehnelt, Keating, Kulkarni, Puchwein, MNRAS 532(2)

2022 *The short ionizing photon mean free path at $z=6$ in Cosmic Dawn III, a new fully-coupled radiation-hydrodynamical simulation of the Epoch of Reionization*, Lewis, Ocvirk, Sorce, Aubert, **Conaboy**, Shapiro, Dawoodbhoy, Teyssier, Yepes, Gottlöber, Ahn, Iliev, Th  lie, MNRAS 516(3)

Conference proceedings

2022 *The Reionisation of the Local Universe in the Hestia Suite*, John von Neumann Institute for Computing Symposium, **Conaboy**, Iliev, Libeskind

Supervision

Assistant supervisor

2022-present Jennifer Feron, PhD, University of Nottingham

Talks

Oct 2025 CCS Colloquium, CCS, Tsukuba, **invited**

Oct 2025 KMM Discussion Meeting, NAOJ, Tokyo, **invited**

Sep 2025 Kaba Kada EoR Meeting, Port Douglas

Apr 2025 Cake Talk, DAWN, Copenhagen

Feb 2024 Astronomy Colloquium, ICC, Durham, **invited**

Nov 2023 TIFR State of the Universe, TIFR, Mumbai (online)

Nov 2023 Cambridge Galaxies Discussion Group, KICC, Cambridge, **invited**

Jun 2023 CLUES Meeting 2023, LMU CAS, Munich

Jul 2022 CLUES Meeting 2022, UAM, Madrid

Sep 2021 RAMSES User Meeting 2021, online

Dec 2020 PhD in a Pandemic 2020, online

Nov 2020 CLUES Mid-term Meeting, online

Oct 2020 Third Global 21cm Meeting, online

Oct 2020 RAS Specialist Meeting, London, UK

Grants

I have been involved in multiple successful applications for computing time, both at national and international facilities. The total monetary value of the result of these applications is over £1M in compute time, of which £660k is as Co-PI. The approximate monetary value of each compute time award is estimated using the core-hour rate offered by the University of Nottingham of £0.015 per core-hour (Oct 2025).

Co-PI

- 2025 JUWELS (Jülich, Germany) computing time (PI: Dr Noam Libeskind, PC: Prof Ilian Iliev) **14.2M core-h, £213k**
- 2024 JUWELS (Jülich, Germany) computing time (PI: Dr Noam Libeskind, PC: Prof Ilian Iliev) **8.8M core-h, £132k**
- 2023 JUWELS (Jülich, Germany) computing time (PI: Dr Noam Libeskind, PC: Prof Ilian Iliev) **10.0M core-h, £150k**
- 2022 JUWELS (Jülich, Germany) computing time (PI: Dr Noam Libeskind, PC: Prof Ilian Iliev) **11.0M core-h, £165k**

Contributor

- 2025 EuroHPC, LUMI-C (Kajani, Finland) computing time (PI: Dr Laura Keating) **15.1M core-h, £227k**
- 2024 DiRAC (Cambridge, Edinburgh, and Durham, UK) computing time (PI: Prof James Bolton) **12.7M core-h, £190k**
- 2021 PRACE, Beskow/Dardel KTH (Stockholm, Sweden) computing time (PI: Prof Ilian Iliev) **12.0M core-h, £180k**

Awards and press releases

- 2022 Physics Finalist, STEM for Britain
Selected to present a poster in the Houses of Parliament to members of both Houses. Attendance covered in [local news media](#), including BBC radio.

Conferences and workshops

Organising

- 2025 EAS 2025 SS22 – Modelling the first billion years, *SOC*, Cork, Ireland
Selecting talks
- 2022–present University of Nottingham Astronomy Seminar Series, *Organiser*, Nottingham, UK
Inviting and hosting guest speakers
- 2020 SAZERAC 2020, *LOC*, online
Moderating discussion

Teaching

- 2020 Foundation Mathematics B, *University of Sussex*
Assisting with workshops, marking.

- 2019 Scientific Computing, *University of Sussex*
Assisting with workshops, marking.
- 2019 Financial Computing with MATLAB, *University of Sussex*
Assisting with workshops, marking.

■ Computing skills

I am an experienced user of various programming languages and astrophysical codes, those which I have used extensively are listed below.

Languages Python (numpy, scipy, matplotlib, mpi4py, yt), Fortran, bash/sh, MPI, C/C++, Matlab

Codes ramses, music, camb, gadget, aton

Other Linux, High performance computing, L^AT_EX