

James Nightingale CV

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Employment

Newcastle University <i>Ernest Rutherford Fellow</i>	March 2024 - Present
Concr & Durham University <i>Royal Society Short Industry Fellow</i>	September 2021 – 2022
Durham University <i>Post-Doctoral Research Assistant</i>	September 2016 – 2024

Education

The University of Nottingham PhD in Astronomy	September 2012 – July 2016
The University of Nottingham Physics MSci (First Class)	September 2008 – July 2012

- **World-Leading Research:** Authored 30+ cosmology papers and delivered an invited talk at the 381st International Astronomical Union Symposium.
- **Public Engagement:** Featured in a Cosmology & Cancer press campaign, including a two-page spread in *The Sunday Times* and a live TV interview on GB News, separate from my black hole discovery coverage.
- **PhD Supervision:** Supervised two PhD students to thesis completion, guiding their research using PyAutoLens on automated lensing analysis and cosmological simulations. One student pursued an Astronomy PDRA, the other joined the civil service.
- **Euclid:UK** I chair the Euclid:UK Coordination Group, facilitating UK researchers to maximize the scientific return from Euclid data. In August 2025, I was PI on an STFC “Support for Space Mission Science Preparation” grant (£70,000), which will fund Euclid:UK annual meetings and support ECRs and Euclid scientists to attend international Euclid meetings through 2029.
- **High-Performance Computing:** Awarded 7.5M core-h CPU + 3.6k GPU-h on DiRAC RAC 13 (2024). As computing Lead of the Euclid:UK Coordination Group (2023 - 2025), I coordinated the 2024 and 2025 resource calls, securing over 1500 CPU years for the UK science community.
- **Euclid:** Developed software to mitigate radiation damage effects on Euclid’s sensitive electronics, including tools for astronomical image analysis. Awarded the Euclid STAR Prize (2019), served on the STAR Prize Committee (2020–2022), and achieved Euclid Builder Status (2022), securing top-tier Euclid data access. Extensive experience with Euclid coding environment which Portsmouth RSE’s work in.
- **Public Engagement:** Delivered outreach talks on gravitational lensing to 10+ UK astronomy societies (2013–2021), the University of Nottingham Public Lecture Series (2015), and Durham Inspired: Live in Lockdown (2020). Served as BBC Stargazing Live Event Coordinator (2014) for inflatable planetarium show at the University of Nottingham (2013–2015). Gave Civil Service Well-Being talks (2024 & 2025).
- **Service:** Journal reviewer for MNRAS, ApJ, A&A, AJ, Nature Astronomy and JOSS (2018–present). Grant reviewer for Poland’s National Science Centre (2025). PhD thesis examiner (2024), SOC member for "Dark Matter under the Gravitational Lens" (Hong Kong), EAS 2025 session.
- **Multidisciplinary Recognition:** Invited speaker at the STFC Cancer Diagnosis Network (2021), Royal Society Industry College Network Event (2022), and Bionow Oncology & Precision Medicine Conference (2024).
- **RSE Supervision:** Supervised seven RSEs total, five with DiRAC (Jonathan Frawley, Jake Amey, Makis Kappas, Kolen Cheung, Gokmen Cilic), one with ICG (Coleman Krawczyk) and a freelance engineer via industry grants (Richard Hayes, RGHSoftware).

- **Habitable Worlds Observatory (HWO):** Submitted a black hole science case to define NASA's HWO science requirements and running an HWO session for NAM 2025.

The following reiterates achievements **already described in the Research & Innovation Statement**, [URL links clickable for .pdf version](#).

Honours

- 2023: Ernest Rutherford Fellowship (~£600,000)
- 2022: Euclid Consortium Builder
- 2021: Royal Society Short Industry Fellowship, £20,625
- 2021: Durham University Physics Department Award for Excellence
- 2019: Euclid Star Prize, Junior Scientist Award

Grants & Funding

- 2025: Euclid:UK Support for Space Mission Science Preparation, £70,000
- 2024: AI-Vision, Innovate UK*, £600,000 total, £90,000 to Durham
- 2024: ARCHER GPU eCSE grant, £171,000
- 2024: DiRAC RAC 17 proposal: 0.5 FTE Software Engineer Support
- 2021: DiRAC RAC 13 proposal: 7.5 M-core hCPU + 3.6 kGPU-h
- 2021: DiRAC RAC 13 proposal: 0.5 FTE Software Engineer Support
- 2021: DiRAC DDT Proposal: 0.25 FTE Software Engineer Support
- 2020: Innovate UK grant w/ Roche*, £1M total, £114,000 to Durham
- 2020: STFC Opportunities PPAN Grant*, £141,510
- 2019: STFC Impact Acceleration Grant*, £23,000 (featured in STFC handbook 2021)

*Due to STFC / Innovate eligibility criteria requiring an open-ended contract, my line manager acted as PI.

Press:

- 2025: DiRAC Deep Dive on PyAutoLens GPU Code Conversion
- 2025: Euclid Q1 Press Feature
- 2024: AI-Vision Biotech Project
- 2023: Televised interview on BBC4 *The Sky at Night*
- 2023: LBC with Andrew Marr
- 2023: Times Radio, GB News, ABC Australia Radio, BBC Radio Newcastle, Tynes Radio, TalkTV Radio, Durham University Ad Campaign to enhance global reputation, BBC *The Naked Scientist*
- 2021: GB News Live Interview, Cosmology & Cancer campaign
- 2021: *The Sunday Times*, Cosmology & Cancer campaign with Roche, ConcR for Innovate UK grant
- 2016: Press Release, *AutoLens Analysis Steps Up for Euclid's 100,000 Strong Gravitational Lenses*, National Astronomy Meeting, Nottingham, United Kingdom

Invited Talks

- 2024: Bionow Oncology & Precision Medicine
- 2023: PRECISE Summer School, Poland
- 2023: International Astronomy Union Invited Talk
- 2022: Royal Society Industry College Network Event
- 2021: STFC Summer School of Data Intensive Science
- 2021: STFC Cancer Diagnosis Network online event
- 2015-Present: 20+ invited seminars internationally, including Groningen, Brazil, Leiden & Bristol

Publications

URL links clickable for .pdf version.

First Author

- **2025:** Nightingale, J, “The COSMOS-Web Lens Survey (COWLS) I: Discovery of >100 high redshift strong lenses in contiguous JWST imaging”, submitted to **MNRAS**
- **2024:** Nightingale, J, “Scanning for Dark Matter Subhalos in 54 strong gravitational lenses”, **MNRAS** 527: 10480 <https://doi.org/10.5281/zenodo.7093469>
- **2024:** Nightingale, J, “PyAutoCTI: Open-Source Charge Transfer Inefficiency Calibration”, **Journal of Open Source Software**, 10.21105
- **2023:** Nightingale, J, “Abell 1201: Detection of an Ultramassive Black Hole in a Strong Gravitational Lens” **MNRAS** 521: 3298 <https://doi.org/10.5281/zenodo.7051647>
- **2022:** Nightingale, J, “PyAutoGalaxy: Open-Source Multiwavelength Galaxy Structure & Morphology”, **Journal of Open Source Software**, 8:4475
- **2021:** Nightingale, J, “PyAutoFit: A Classy Probabilistic Programming Language for Model Composition and Fitting”, **Journal of Open Source Software** 58: 2550
- **2021:** Nightingale, J, “PyAutoLens: Open-Source Strong Gravitational Lensing”, **Journal of Open Source Software** 58: 2825
- **2019:** Nightingale, J, “Galaxy structure with strong gravitational lensing: decomposing the internal mass distribution of massive elliptical galaxies”, **MNRAS** 489: 2049
- **2018:** Nightingale, J, “AutoLens: Automated Modeling of a Strong Lens’s Light, Mass and Source”, **MNRAS** 478: 4738
- **2015:** Nightingale, J, “Adaptive Semi-linear Inversion of Strong Gravitational Lens Imaging”, **MNRAS** 452: 2940

Supervised PhD Students

- **2024:** Etherington, A, “Strong gravitational lensing’s ‘external shear’ is not shear”, **MNRAS** 531:3684
- **2023:** Etherington, A, “Beyond the bulge-halo conspiracy? Density profiles of Early-type galaxies from extended-source strong lensing”, **MNRAS** 521:6005
- **2022:** Etherington, A, “Automated galaxy–galaxy strong lens modelling: No lens left behind”, **MNRAS** 512:3275
- **2022:** He, Q, “Testing strong lensing subhalo detection with a cosmological simulation”, **MNRAS** 518:220
- **2022:** He, Q, “Galaxy-galaxy strong lens perturbations: line-of-sight haloes versus lens subhaloes”, **MNRAS** 512:5862
- **2022:** He, Q, “A forward-modelling method to infer the dark matter particle mass from strong gravitational lenses”, **MNRAS** 511:3046

Co-Author (Selected Recent High Impact with Major Contribution)

- **2025:** Lines, N, The revolution in strong lensing discoveries from Euclid, **Invited Nature Astronomy Review**
- **2025:** He, Q, Not so dark, not so dense: an alternative explanation for the lensing subhalo in SDSSJ0946+1006, Submitted to **MNRAS**
- **2025:** Cao, X, Probing Dark Matter Substructures with Free-Form Modelling: A Case Study of the ‘Jackpot’ Strong Lens, Submitted to **MNRAS**
- **2025:** Hogg, N, “The COSMOS-Web Lens Survey (COWLS) III: forecasts versus data”, submitted to **MNRAS**
- **2025:** Mahler, G, “The COSMOS-Web Lens Survey (COWLS) II: depth, resolution, and NIR coverage from JWST reveal 17 spectacular lenses”, submitted to **MNRAS**
- **2024:** Lange, S, “Galaxy Mass Modelling from Multi-Wavelength JWST Strong Lens Analysis: Dark Matter Substructure, Angular Mass Complexity, or Both?”, **MNRAS** 539:70

- **2024:** Barone, T, “Gravitational Lensing Reveals Cool Gas within 10-20 kpc around a Quiescent Galaxy”: **Nature Communications Physics** 7, 286
- **2024:** Amvrosiadis, A, “Lopsidedness in Early-Type Galaxies: the role of the $m=1$ multipole in Isophote Fitting and Strong Lens Modelling”, **MNRAS** 540: 3281

Euclid Builder

100+: Additional Euclid publications for contribution as a Euclid data builder.