

# THOMAS HARVEY

Manchester, UK. | British citizen

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## EDUCATION

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**PhD - Jodrell Bank Centre for Astrophysics, University of Manchester** *Sept. 2022 - March 2026 (est)*

Studying the first galaxies using JWST, supervised by Professor Christopher Conselice and Dr. Nathan Adams.

**MPhys Astrophysics with a Year Abroad - University of Southampton** *Sept. 2018 - July 2022*

Achieved a high first class degree with an average of **86.2%** - achieving a Dean's Award and selection onto a prestigious research year at the **Center for Astrophysics | Harvard and Smithsonian**.

## RESEARCH EXPERIENCE

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**Jodrell Bank Centre for Astrophysics, University of Manchester** *Sept. 2022 - March 2026*

*PhD. Researcher*

- Working within the EPOCHS group, my PhD research has focused on locating and characterizing high-redshift galaxies in imaging surveys using JWST. I've taken an active role in planning and executing my own research, and have a strong track record in first-author publications, as well as contributing to and publishing my own open-source software.
- Contributed to >10 published papers in the EPOCHS series, including helping to develop the foundational galaxy catalogues and selection criteria for the EPOCHS team. I've also engaged more widely as part of the JWST **PEARLS** GTO team, collaborating internationally on a variety of projects including strong lensing searches, galaxy cluster studies and statistical studies of galaxies and AGN.
- At Manchester I have helped to supervise and mentor undergraduate and Master's students, many of which have resulted in student-lead publications. I also organize the journal club for the high-redshift group at Manchester as a way to keep up to date with new research.

**Center for Astrophysics | Harvard and Smithsonian (CfA)** *Sept. 2021 - May 2022*

*Visiting Research Fellow*

- Researched AGN feedback with Dr. W. Peter Maksym in Dr. P. Fabbiano's research group. My research focused on the role of AGN-driven jets and winds in exciting X-ray emission from gas within a complex galaxy, using imaging and spectroscopy from both Chandra and the Hubble Space Telescope.

## PUBLICATIONS

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**36** publications, including **4** first-author since 2022, with **>1000** total citations and a h-index of **17**. A complete publication list is available on [NASA/ADS](#).

## RESEARCH INTERESTS

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Galaxy formation and evolution, high-redshift galaxies, resolved studies of galaxies, population statistics, optical/IR astronomy, galaxy clusters, survey astronomy, AGN and quasars, AGN feedback, Bayesian statistics, forward modelling hydrodynamical simulations, simulation-based inference, astro ML, multi-wavelength astronomy.

## COLLABORATIONS

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- PEARLS/SKYSURF JWST GTO Team
- Euclid Consortium Full Member

## AWARDS

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Dean's List Award for Outstanding Achievement	2022
Selected for flagship research year at the Harvard-Smithsonian Center for Astrophysics	2021
Inaugural Whittaker Trust Bursary Recipient	2019-2022
Elected Fellow of the Royal Astronomical Society (FRAS)	2020
University of Southampton - Best Performance in Physics Part 1 (1st Year)	2019
Guernsey Grammar School & Sixth Form R. Fulford Cup for Physics	2018

## TALKS AND CONFERENCE PRESENTATIONS

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<b>Invited Seminar</b> Kavli Institute for Cosmology, University of Cambridge, Cambridge, UK. <i>"JWST's View of Star Formation and Mass Growth in Early Galaxies"</i>	Oct. 2025
<b>Invited Colloquium (remote)</b> , Núcleo de Astrofísica, Universidade Cidade de São Paulo, Brazil <i>"JWST's view on star formation and mass growth in early galaxies"</i>	June 2025
<b>Big Galaxies, Big Problems</b> , Lorentz Center, University of Leiden, Leiden, The Netherlands <i>"Behind the Spotlight: A systematic assessment of outshining using NIRCcam medium-bands in the JADES Origins Field"</i>	May 2025
<b>First Galaxies</b> , University of Oxford, Oxford, UK <i>"Unveiling the Complex Star Formation Histories of Early Galaxies Through Spatially-Resolved JWST NIRCcam Analysis"</i>	May 2025
<b>First Stars VII</b> , Flatiron Institute, New York City, USA <i>"Massive Mysteries: Investigating stellar mass variation at high redshift using PEARLS, CEERS and JADES"</i>	May 2024
<b>Extreme Galaxies in their Extreme Environments in the Early Universe</b> , Reykjavik, Iceland <i>"Massive Mysteries: Investigating the Unexpectedly Large Masses of High-Redshift Galaxies using PEARLS, CEERS and JADES"</i>	May 2024
<b>National Astronomy Meeting</b> , University of Cardiff, Cardiff, UK <i>"Investigating the Buildup of Stellar Mass in the Early Universe"</i>	July 2023
<b>HEA Seminar</b> , Center for Astrophysics   Harvard & Smithsonian, Harvard University, MA, USA <i>"Signatures of feedback in the spectacular extended emission region of NGC 5972"</i>	July 2023

## SOFTWARE DEVELOPMENT

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**SYNFERENCE:** Leading development of new Python package using simulation-based inference (SBI) to accelerate galaxy SED fitting for photometry and spectroscopy.

**SYNTHESIZER:** Core team member and contributor to Python package for synthetic galaxy and AGN observables.

**EXPANSE:** Lead developer of Python package for resolved SED-fitting of galaxies, including interactive GUI.

**GALFIND:** Co-developer of software pipeline for automated catalogue creation, galaxy selection and SED fitting.

**BD-FINDER** Developed package for identifying and characterizing brown dwarfs using synthetic templates.

## SKILLS

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**Key Skills:** academic writing, problem solving, time-management, teamwork, and communication.

**Programming and Data Analysis:** Bayesian statistics, Python: NUMPY, SCIPY, PANDAS AND ASTROPY

**Data Visualisation:** MATPLOTLIB, BOKEH, PANEL, HOLOVIEWS, PLOTLY

**Astro Tools:** BAGPIPES, PROSPECTOR, EAZY-PY, PPXF, JWST pipeline, SPECUTILS, PHOTUTILS, SEXTRACTOR

**HPC and ML Tools:** PYTORCH, JAX, SBI, LTU-ILI, SCIKIT-LEARN, OPTUNA, slurm

## OUTREACH, TEACHING AND SUPERVISION

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**Graduate Teaching Assistant, University of Manchester** 2022-

- Lead GTA for Theory Computing Project module, teaching key scientific programming concepts and supporting semester-long group projects (PHYS20872).
- Ran Intro to Python programming support lab for undergraduate physics students (PHYS20161).
- Led small group tutorials covering undergraduate physics courses on astrophysics and maths (PHYS10071/10091).

**Science Communication** 2018-

- Presented public lectures to local astronomical societies and schools in the North West of England on astronomy.
- Wrote and edited articles on astronomy as editor of the newsletter for La Société Guernesiaise Astronomy Section.