

THOMAS HARVEY

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EDUCATION

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

- Undertaking a research year at the **Center for Astrophysics | Harvard and Smithsonian** in Cambridge, MA.
- Achieved a current degree average of **88.9%** - achieving best in first year and selection onto the Year Abroad program as one of the top five students in the year.

Guernsey Grammar School and Sixth Form Centre *September 2012 - June 2018*

A Levels: Physics: A*, Further Maths: A, Maths: A, Computer Science (AS): B *2018*

GCSE's: 5 A*'s, 6 A's and 1 B *2016*

RESEARCH EXPERIENCE

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

Visiting Research Fellow

- Researching AGN feedback with **Dr. W. Peter Maksym** in **Dr. P. Fabbiano's** research group. My research focuses on the role of the AGN, 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.
- Collaborating with other members of the research group to solve problems and advance research, including participating in weekly group meetings.
- Presenting a poster on my research to date at the AAS 239 conference in January, as well as delivering a talk to an CfA-wide colloquium in May 2022. I intend to submit the results as a paper to MNRAS by May 2022.
- Participating in the Harvard-MIT pre-doc journal club, and attending talks and colloquia given by divisions within the CfA and other related organisations such as the Black Hole Institute.

Observational Project: Mass and Electron Density of a Planetary Nebulae *March - July 2020*

- Developed a flux calibration method to determine the electron density of a planetary nebula from narrowband [SII] observations.
- Conducted remote observations using the IAC-80 telescope in Tenerife, and implemented a custom data reduction pipeline in Python to analyse the results.
- Produced an academic report in LaTeX which was graded at **94.4%**.

Computational Project: Chandrasekhar Mass of White Dwarfs *Feb - May 2021*

- Derived the differential equations describing the radial dependence of mass and density within a white dwarf, and solved them numerically using Python to determine the maximum mass of a white dwarf for different elemental compositions.
- Wrote a full A&A style paper on the results, which received a mark of **96%**.

RESEARCH INTERESTS

Galaxy evolution and formation, AGN and quasars, AGN feedback, integral-field spectroscopy, optical astronomy, high energy astrophysics, jets, outflows and shocks, AGN variability, multi-wavelength astronomy, sub-arcsecond x-ray imaging.

AWARDS

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

SKILLS

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

Programming and Data Analysis: Python - NumPy, SciPy, matplotlib, pandas and AstroPy, pPXF, stistools, specutils.

Chandra Tools: Experience with Ciao, Sherpa, XSPEC, ds9, ChaRT and MARX.

Academic Tools: Very experienced with L^AT_EX(Overleaf), BibTeX, Mendeley, arXiv and NASA ADS.

OUTREACH AND TEACHING

Science Communication 2018-2021

- Wrote and edited articles on astronomy as editor of the newsletter for La Société Guernesiaise Astronomy Section.
- Taught telescope operation and information about the night sky and planets to the public at open evenings, as well as taking solar telescopes to local schools to teach the students about the Sun.
- Presented in person and online lectures on topics such as black holes, comets and Mars to members of the public, youth groups and school children. Answered questions and presented information appropriate for the audience.
- Regular appearances on local radio and TV to explain astronomical phenomena such as comets, eclipses and meteor showers to the general public and to encourage them to engage with astronomy.

RELEVANT WORK EXPERIENCE

First Central Insurance July 2019 - August 2019
Digital Greenhouse Intern

- 6 week internship working collaboratively a full-stack developer within an agile scrum team, developing a web-based customer claims portal using C# and WCF Services for the backend and HTML, CSS, and Javascript for the front-end.
- Collaboratively developed a web-based platform for customers to view and edit vehicle insurance claim information, designed from the ground up to protect sensitive customer data.

REFERENCES

Supervisor

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