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

Harvard-Smithsonian Center for Astrophysics (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 clouds within NGC 5972, including a large extended line emission region.
- Collaborating with other members of the research group to solve problems and advance the project, 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. The project might also lead to a paper to be published in MNRAS next year.
- Participating in Harvard-MIT pre-doc journal club, and attending talks and colloquia given by divisions within the CfA and other related institutes such as the Black Hole Institute.

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

- Developed a 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 Dwarf's *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%**.

INTERESTS

AGN and quasars, jets, outflows and shocks, AGN feedback, galaxy evolution, x-ray astronomy, multi-wavelength astronomy, sub-arcsecond x-ray imaging, spectroscopy, AGN variability, black holes.

AWARDS

Selected for flagship research year at the Harvard-Smithsonian Center for Astrophysics *2021*

Elected Fellow of the Royal Astronomical Society (FRAS) *2020*

Whittaker Trust Bursary Recipient *2019*

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: problem solving, time-management, teamwork, communication and academic writing.
Programming and Data Analysis: Python - NumPy, SciPy, matplotlib, pandas and AstroPy, Jupyter Notebooks.
Chandra Tools: Experience with Ciao, Sherpa, XSPEC, ds9, ChaRT and MARX.
Academic Tools: LaTeX (Overleaf), BibTeX, Mendeley, arXiv and NASA ADS.

OUTREACH AND TEACHING

Science Communication 2018-2021

- 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.
- 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.
- 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.

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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