CHRISTOPHER N. EVERETT

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Education

D.Phil. Gamma Ray Astronomy **Oct. 2022 – present**
University of Oxford, St Anne's College, United Kingdom

M.Sc. Space Systems Engineering **Sept. 2021 – Sept. 2022**
University of Southampton, United Kingdom *Classification: First-Class*

M.Phys. Physics **Oct. 2017 – June 2021**
University of Oxford, Keble College, United Kingdom *Classification: First-Class*

Research

Gamma Ray Astronomy *D.Phil. Project* **Oct. 2022 – present**
↪ Prof. Garret Cotter *University of Oxford*

- Development of the DIPLODOCUS framework, a mesoscopic model of jetted astrophysical sources (with a focus on blazar) and the associated `Diplodocus.jl` code.
- Aim is to apply DIPLODOCUS to gain insight into particle creation and acceleration within sources such as blazar by comparison to observed spectra.

Magnetic Reconnection Plasma Thruster *M.Sc. Project and Continuation Thereafter* **Dec. 2021 – present**
↪ Prof. Charlie Ryan *University of Southampton*

- Exploration of using magnetic reconnection as a plasma acceleration mechanism for spacecraft propulsion, inspired by astrophysical eruptions on the solar surface (solar flares and coronal mass ejections)
- Modelling (using the `PLUTO` and `COMSOL` software packages) and experimental assessment of this novel concept and ongoing expansion of the concept of using high energy astrophysical phenomena to inspire terrestrial propulsion systems.

Micro-Bipropellent Rocket Engine *M.Phys. Project* **Oct. 2020 – July 2021**
↪ Prof. John Gregg *University of Oxford*

- Development of a performance envelope for an oxygen-ethanol bi-propellant micro-rocket engine based on advances in small-scale additive manufacturing technology.

Teaching & Experience

Beams, Bursts and Biscuits *Organiser* **Oct. 2023 – present**

- Organising the Beams, Bursts and Biscuits discussion group in the sub-department of astrophysics at the University of Oxford. The group brings together researchers from all fields with an interest in high-energy astrophysical sources/phenomena.

Exeter College, Oxford *Stipendary Lecturer* **Sept. 2024 – Sept. 2025**

- Tutoring 1st and 3rd year undergraduate physics students
- Courses included: electromagnetism, optics, circuit theory, nuclear and particle physics, and general relativity

Magdalen College, Oxford *Non-Stipendary Lecturer* **Jan. 2021 – Sept. 2024**

- Tutoring 2nd and 3rd year undergraduate physics students
- Courses included: mathematical methods, nuclear and particle physics, and fluid dynamics

Oxford Physics Teaching Laboratory *Lab. Technician* **July 2020 – Aug. 2020**

- Designed a new practical for the 3rd year undergraduate physics course, involving the analysis of a shear-layer instability generated in a differentially rotating water tank.

Publications

Everett, C. N. and Cotter, G. (2024). Computational forms for binary particle interactions at different levels of anisotropy. *RAS Techniques and Instruments*, 3(1):548–555.

Everett, C. N. and Cotter, G. (2025). DIPLODOCUS I: Framework for the evaluation of relativistic transport equations with continuous forcing and discrete particle interactions.

Everett, C. N., Klinger-Plaisier, M., and Cotter, G. (2025). DIPLODOCUS II: Implementation of transport equations and test cases relevant to micro-scale physics of jetted astrophysical sources.

Everett, C. N. and Ryan, C. N. (2023). A linear magnetic reconnection based plasma thruster for spacecraft propulsion. In *AIAA SciTech Forum 2023*, page 448.

Invited Talks

Extragalactic Jets at all Scales: a Cretan View, *Heraklion, Greece* **Aug. 2025**
"DIPLODOCUS: going beyond isotropic, single zone blazar emission model"

High Energy Phenomena in Relativistic Outflows IX, *Rio de Janeiro, Brazil (remote)* **Aug. 2025**
"DIPLODOCUS: going beyond isotropic, single zone blazar emission model"

DESY Workshop on Numerical Multi Messenger Modelling, *Berlin, Germany* **Feb. 2025**
"DIPLODOCUS: an anisotropic Boltzmann equation solver designed to model AGN jet dynamics and emissions"

National Astronomy Meeting, *Hull, United Kingdom* **July. 2024**
"Developments Towards a New Kinetic Jet Model"

Awards

Johnson Memorial Prize, University of Oxford **2021**
Best M.Phys. project in the subject of Atmospheric, Oceanic and Planetary Physics

Technical Skills

Programming Languages Julia, C, LaTeX **Software** `Diplodocus.jl, PLUTO, Mathematica, COMSOL`