

CHRISTOPHER N. EVERETT

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Education

D.Phil. Gamma-ray Astronomy University of Oxford, St Anne's College, United Kingdom	Oct. 2022 – present
M.Sc. Space Systems Engineering University of Southampton, United Kingdom	Sept. 2021 – Sept. 2022 <i>Classification: Distinction</i>
M.Phys. Physics University of Oxford, Keble College, United Kingdom	Oct. 2017 – June 2021 <i>Classification: First-Class</i>

Research

Gamma-ray Astronomy <i>D.Phil. Project</i> ↪ Prof. Garret Cotter	Oct. 2022 – present <i>University of Oxford</i>
<ul style="list-style-type: none">Development of the DIPLODOCUS framework, and the associated <code>Diplodocus.jl</code> code (link to the code's website), for particle transport through phase space with arbitrary forces, interactions, and spacetime geometry.Application of <code>Diplodocus.jl</code> to the modelling of jetted astrophysical sources, focusing on blazar emissions with self-consistent inclusion of large-scale jet structure and small-scale particle interactions, previously unattainable with existing models.Identification of how the expanded physics contained within these <code>Diplodocus.jl</code> simulations of blazar emissions, in comparison to the traditional single-zone models, may lead to deviations from our current understanding of these objects.	
Magnetic Reconnection Plasma Thruster <i>M.Sc. Project and Continuation Thereafter</i> ↪ Prof. Charlie Ryan	Dec. 2021 – present <i>University of Southampton</i>
<ul style="list-style-type: none">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-Bipropellant Rocket Engine <i>M.Phys. Project</i> ↪ Prof. John Gregg	Oct. 2020 – July 2021 <i>University of Oxford</i>
<ul style="list-style-type: none">Development of a performance envelope for an oxygen-ethanol bipropellant micro-rocket engine based on advances in small-scale additive manufacturing technology.	

Teaching & Experience

Beams, Bursts and Biscuits <i>Organiser</i>	Oct. 2023 – present
<ul style="list-style-type: none">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 <i>Stipendiary Lecturer</i>	Sept. 2024 – Sept. 2025
<ul style="list-style-type: none">Tutoring 1st- and 3rd-year undergraduate physics studentsCourses included: electromagnetism, optics, circuit theory, nuclear and particle physics, and general relativity	
Magdalen College, Oxford <i>Non-Stipendiary Lecturer</i>	Jan. 2021 – Sept. 2024
<ul style="list-style-type: none">Tutoring 2nd- and 3rd-year undergraduate physics studentsCourses included: mathematical methods, nuclear and particle physics, and fluid dynamics	
Oxford Physics Teaching Laboratory <i>Laboratory Technician</i>	July 2020 – Aug. 2020
<ul style="list-style-type: none">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.	

Awards

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

Everett C. N., Klinger-Plaisier M., Cotter G., 2025, DIPLODOCUS II: Implementation of transport equations and test cases relevant to micro-scale physics of jetted astrophysical sources, [arXiv:2510.12505](#), (Submitted to the Open Journal of Astrophysics)

Everett C. N., Cotter G., 2025, DIPLODOCUS I: Framework for the evaluation of relativistic transport equations with continuous forcing and discrete particle interactions, [arXiv:2508.13296](#), (Submitted to the Open Journal of Astrophysics)

Everett C. N., Cotter G., 2024, Computational forms for binary particle interactions at different levels of anisotropy, [RAS Techniques and Instrumentation](#), **3**, 548

Everett C. N., Ryan C. N., 2023, A Linear Magnetic Reconnection Based Plasma Thruster for Spacecraft Propulsion, in [AIAA SciTech Forum 2023](#). p. 448

Contributed Talks

Extragalactic Jets at all Scales: a Cretan View , <i>Heraklion, Greece</i>	Aug. 2025
“DIPLODOCUS: going beyond isotropic, single zone blazar emission model”	
High Energy Phenomena in Relativistic Outflows IX , <i>Rio de Janeiro, Brazil (remote)</i>	Aug. 2025
“DIPLODOCUS: going beyond isotropic, single zone blazar emission model”	
DESY Workshop on Numerical Multi Messenger Modelling , <i>Berlin, Germany</i>	Feb. 2025
“DIPLODOCUS: an anisotropic Boltzmann equation solver designed to model AGN jet dynamics and emissions”	
National Astronomy Meeting , <i>Hull, United Kingdom</i>	July 2024
“Developments Towards a New Kinetic Jet Model”	
AIAA SciTech 2023 Forum , <i>Maryland, United States of America</i>	Jan. 2023
“A linear magnetic reconnection based plasma thruster for spacecraft propulsion”	

Technical Skills

Programming Languages:	Julia, C, L ^A T _E X
Software:	Diplodocus.jl, PLUTO, Mathematica, COMSOL