

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>
• 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>
• 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>
• 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
• 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
• Tutoring 1 st - and 3 rd -year undergraduate physics students	
• Courses included: electromagnetism, optics, circuit theory, nuclear and particle physics, and general relativity	
Magdalen College, Oxford <i>Non-Stipendiary Lecturer</i>	Jan. 2021 – Sept. 2024
• Tutoring 2 nd - and 3 rd -year undergraduate physics students	
• Courses included: mathematical methods, nuclear and particle physics, and fluid dynamics	
Oxford Physics Teaching Laboratory <i>Laboratory Technician</i>	July 2020 – Aug. 2020
• Designed a new practical for the 3 rd -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](https://arxiv.org/abs/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](https://arxiv.org/abs/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, 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”	
AIAA SciTech 2023 Forum, Maryland, United States of America	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