Dr Ethan D. Taylor

ORCID | Personal Website | Email

Research Interests

Nature of Dark Matter — Galaxy Formation & Evolution — Globular Cluster Formation & Evolution — Low-Mass Galaxies — Cosmological Simulations — Elemental Anticorrelations

Employment

Postdoctoral Research Associate — **October 2024 – Present**
University of Surrey, United Kingdom
Grant Number: ST/Y002865/1

Education

Ph.D in Astrophysics (Awarded February 2025) — **October 2020 – September 2024**
University of Surrey, United Kingdom

MPhys in Physics with Astrophysics — **September 2016 – August 2020**
Northumbria University, United Kingdom

Publications

Total Publications: 8; Refereed: 6; Primary Author: 1; $\geq 3^{rd}$ Author: 4; h-index: 6;
ORCID; ADS Listing; citations compiled by SAO/NASA Astrophysics Data System

Highlighted Publications

- **Taylor, Ethan D.** et al. **Sept. 2025**. "The emergence of globular clusters and globular-cluster-like dwarfs". In: *Nature* 645.8080, pp. 327–331. doi: 10.1038/s41586-025-09494-x. arXiv: 2509.09582 [astro-ph.GA].
- Rey, Martin P., **Taylor, Ethan** et al. **Aug. 2025**. "EDGE: the emergence of dwarf galaxy scaling relations from cosmological radiation-hydrodynamics simulations". In: *Monthly Notices of the Royal Astronomical Society* 541.2, pp. 1195–1217. doi: 10.1093/mnras/staf1058. arXiv: 2503.03813 [astro-ph.GA].
- Gray, Emily I., Read, Justin I., **Taylor, Ethan**, et al. **May 2025**. "EDGE: a new model for nuclear star cluster formation in dwarf galaxies". In: *Monthly Notices of the Royal Astronomical Society* 539.2, pp. 1167–1179. doi: 10.1093/mnras/staf521. arXiv: 2405.19286 [astro-ph.GA].

Grants & Awards

University of Surrey Vice-Chancellor Researcher of the Year	2025
University of Surrey FEPS Researcher of the Year (£250)	2025
University of Surrey School of Mathematics and Physics Researcher of the Year	2025

Scientific Collaboration

LSST Junior Associate	2023 – Present
EDGE Collaboration	2020 – Present

Computer & Telescope Time

2025	HST Cycle 33	Co-I	33 Orbits
2025	Keck Telescope Time	Co-I	1 Night
2024	EDGE3.0	Co-I	150M CPU Hours
2020	EDGE2.0	Co-I	50M CPU Hours

Team Management & Leadership

EDGE3.0 DiRAC Featured Project

I am currently leading the management and delivery of the EDGE3.0 simulation suite, a 150M CPU-hour allocated project on DiRAC the UKs national supercomputer. This project builds from the success of the EDGE2.0 simulation suite introducing higher mass dwarf galaxies (up to $6 \times 10^{10} M_{\odot}$) at the same spatial resolution of 3pc.

EDGE2.0

I have previously supported the delivery of the EDGE2.0 simulation suite, a 50M CPU-hour allocation on DiRAC. This simulation suite built upon the previous success of EDGE expanding the complete suite to higher mass ($1 \times 10^{10} M_{\odot}$), and alternate cosmologies (3keV, 6keV, 12keV WDM relic particle masses). The EDGE2.0 also introduced a set of physics improvements over the original EDGE suite (see here for details).

Surrey Astro Group Lunch Talks

During my time apart of the Surrey Astrophysics group I organised and chaired the internal group lunch talks session. This involved the management of schedules and handling of time keeping and questions.

Supervision & Mentoring

A. Mkiza (Oxford Brookes University) 2025 - present

Mentor via The Cowrie Scholarship Foundation

C. Cox (University of Surrey) 2025

Co-supervision of Bsc Final year project
EDGE: Characterising Dark Matter Subhalos in Simulated Dwarf Galaxies
Achieved Grade: 75%

Outreach Efforts

Oct 2025	Outreach Talk	Farnham Astronomical Society
Oct 2024	Outreach Talk	Surrey High Street Take Over
Oct 2023	Outreach Talk	Surrey High Street Take Over
Oct 2022	Outreach Talk	Surrey High Street Take Over

Academic Presentations

Jun 2026	Invited Talk*	Local GCs and GC Systems - Sextens Workshop
Mar 2026	Invited Talk*	Hertfordshire Astro group seminar series
Mar 2026	Invited Talk*	Birmingham University Seminar Series
Feb 2026	Invited Talk*	Halifax Nova Scotia, Canada Seminar Series
Sep 2025	Contributed Talk	Bridging Scales 2025, Matera - Italy
Jul 2024	Contributed Poster	Small Galaxies, Cosmic Questions II, Durham University
Feb 2024	Contributed Talk	Building Galaxies From Scratch, Vienna
Dec 2023	Invited Talk	M.I.T. Journal Club
Nov 2023	Invited Talk	FLAT talk at Durham University
Jul 2023	Contributed Talk	Galactic Archaeology with old stellar populations - NAM 2023
Jul 2023	Contributed Talk	Astrophysical Simulations: Keeping up with the Frontier - NAM 2023
Nov 2022	Invited Talk	Northumbria University Seminar Series
Sep 2022	Contributed Talk	4th Wetton Workshop
Sep 2021	Contributed Talk	Ramses User Meeting
Jul 2021	Contributed Talk	Low Surface Brightness Universe - NAM 2021

* Indicates talks scheduled to be delivered at a later date

List of Publications

[1] Sakowska, Joanna D., [...], and **Taylor, Ethan D. Nov. 2025**. "Stellar streams around dwarf galaxies in the Local Universe". In: *arXiv e-prints*, arXiv:2511.23314, arXiv:2511.23314. DOI: 10.48550/arXiv.2511.23314. arXiv: 2511.23314 [astro-ph.GA] **Cited. 0 times.**

[2] **Taylor, Ethan D.** et al. **Sept. 2025**. "The emergence of globular clusters and globular-cluster-like dwarfs". In: *Nature* 645.8080, pp. 327–331. DOI: 10.1038/s41586-025-09494-x. arXiv: 2509.09582 [astro-ph.GA] **Cited. 4 times.**

[3] Rey, Martin P., **Taylor, Ethan** et al. **Aug. 2025**. "EDGE: the emergence of dwarf galaxy scaling relations from cosmological radiation-hydrodynamics simulations". In: *Monthly Notices of the Royal Astronomical Society* 541.2, pp. 1195–1217. DOI: 10.1093/mnras/staf1058. arXiv: 2503.03813 [astro-ph.GA] **Cited. 21 times.**

[4] Collins, Michelle L. M., [...], and **Taylor, Ethan**. **July 2025**. *The Extended Clusters of Andromeda - dwarf galaxies or globular clusters?* HST Proposal. Cycle 33, ID. #18020.

[5] Gray, Emily I., [...], **Taylor, Ethan**, et al. **May 2025**. "EDGE: a new model for nuclear star cluster formation in dwarf galaxies". In: *Monthly Notices of the Royal Astronomical Society* 539.2, pp. 1167–1179. DOI: 10.1093/mnras/staf521. arXiv: 2405.19286 [astro-ph.GA] **Cited. 22 times.**

[6] Muni, Claudia, [...], **Taylor, Ethan**, et al. **Jan. 2025**. "EDGE: dark matter core creation depends on the timing of star formation". In: *Monthly Notices of the Royal Astronomical Society* 536.1, pp. 314–323. DOI: 10.1093/mnras/stae2748. arXiv: 2407.14579 [astro-ph.GA] **Cited. 18 times.**

[7] Kim, Stacy Y., [...], **Taylor, Ethan**, et al. **Aug. 2024**. "EDGE: Predictable Scatter in the Stellar Mass–Halo Mass Relation of Dwarf Galaxies". In: *arXiv e-prints*, arXiv:2408.15214, arXiv:2408.15214. DOI: 10.48550/arXiv.2408.15214. arXiv: 2408.15214 [astro-ph.GA] **Cited. 24 times.**

[8] Orkney, Matthew D. A., **Taylor, Ethan** et al. **Nov. 2023**. "EDGE: the shape of dark matter haloes in the faintest galaxies". In: *Monthly Notices of the Royal Astronomical Society* 525.3, pp. 3516–3532. DOI: 10.1093/mnras/stad2516. arXiv: 2302.12818 [astro-ph.GA] **Cited. 20 times.**

[9] Orkney, Matthew D. A., [...], **Taylor, Ethan**, et al. **Sept. 2022**. "EDGE: the puzzling ellipticity of Eridanus II's star cluster and its implications for dark matter at the heart of an ultra-faint dwarf". In: *Monthly Notices of the Royal Astronomical Society* 515.1, pp. 185–200. DOI: 10.1093/mnras/stac1755. arXiv: 2201.13434 [astro-ph.GA] **Cited. 10 times.**