# Elliot Yarnell Davies

*Gonville and Caius College, Trinity Lane, CB2 1TA, UK*
*+44 7827675506*
*eyd20@cam.ac.uk*

## Education

2021– **University of Cambridge (Gonville & Caius College)**, *Ph.D. Astronomy*
**Thesis**: *Pairing Gaia Data with Simulations to Probe the Dark and Stellar Mass Content of the Milky Way*
**Supervisors**: Prof. Vasily Belokurov & Prof. Wyn Evans

2020–2021 **University of Edinburgh**, *MSc (with Merit) Theoretical Physics*
**Thesis:** *Probing the Neutrino Mass Hierarchy with Cosmological Density and Velocity Fields*
**Supervisor**: Prof. John Peacock

2016–2020 **Princeton University**, *A.B. (cum laude) Astrophysics with Applied Mathematics*
**Thesis**: *Smoothing the Universe by Cosmological Contraction in Various Scalar Field Potentials*
**Supervisor:** Prof. Paul Steinhardt

## Publications

In-prep **Investigating the shape of the stellar halo with the imprint of the LMC**
**Elliot Y. Davies**, Adam M. Dillamore, Vasily Belokurov, N. Wyn Evans

Submitted **A stellar halo walks into a bar: creation of substructure from a smooth distribution function**, *MNRAS*
Adam M. Dillamore, Vasily Belokurov, N. Wyn Evans, **Elliot Y. Davies**
https://arxiv.org/abs/2303.00008

14 Feb '23 **Accelerated phase mixing in the stellar halo due to a rotating bar**, *MNRAS*
**Elliot Y. Davies**, Adam M. Dillamore, Eugene Vasiliev, Vasily Belokurov
https://doi.org/10.1093/mnrasl/slad017

9 Dec '22 **Ironing the folds: The phase space chevrons of a GSE-like merger as a dark matter subhalo detector**, *MNRAS*
**Elliot Y. Davies**, Eugene Vasiliev, Vasily Belokurov, N. Wyn Evans, Adam M. Dillamore
https://doi.org/10.1093/mnras/stac3581

25 Nov '22 **Energy wrinkles and phase-space folds of the last major merger**, *MNRAS*
Vasily Belokurov, Eugene Vasiliev, Alis J. Deason, Sergey E. Koposov, Adam M. Dillamore, **Elliot Y. Davies**, Robert J. J. Grand
https://doi.org/10.1093/mnras/stac3436

13 Aug '20 **Robustness of Slow Contraction to Cosmic Initial Conditions**, *JCAP*
Anna Ijjas, William G. Cook, Frans Pretorius, Paul J. Steinhardt, **Elliot Y. Davies**
https://doi.org/10.1088/1475-7516/2020/08/030

23 Jan '20 **Fuzzy dark matter soliton cores around supermassive black holes**, *MNRAS*
**Elliot Y. Davies**, Philip Mocz
https://doi.org/10.1093/mnras/staa202

## Teaching & Supervision

Fall '22 **Part II Stellar Dynamics and the Structure of Galaxies**, *Supervisor*, Insitute of Astronomy, Cambridge

Spring '22 **Part II Introduction to Cosmology**, *Supervisor*, Insitute of Astronomy, Cambridge

## Outreach

Nov.'21 – present Outreach Supervisor for Cambridge Higher Aspirations Scheme, whereby I lead six-to-seven sessions per year, covering topics in introductory Astrophysics and Cosmology for high achieving state-school students. Self-made preparatory work is provided to the students prior to each session, and discussions are held about assigned work during the sessions. (Gonville & Caius College, Cambridge, UK).

Dec '19 Presentation to roughly 50 high school physics students about studying physics at university (Alun School, Mold, UK)

Dec '17 Presentation to talented high school students on going to university in the United States (Alun School, Mold, UK)

## Research Positions

Jun.'19 – Aug.'19 **Princeton University, Dept. of Astrophysical Science**
Princeton University, USA
Undergraduate Summer Researcher – Supervised by Dr. Philip Mocz

Jul.'18 – Sep.'18 **Princeton University, Dept. of Physics**
Princeton University, USA
Undergraduate Summer Researcher – Supervised by Prof. Bill Jones & Dr. Aurelien Fraisse

## Conferences & Talks

Mar' 23 **Talk entitled *The wrinkles and folds of the Milky Way's most recent major merger***
MCR Research Day 2023 (Gonville & Caius College, Cambridge)

Jan' 20 **Poster entitled *How Supermassive Black Holes impact the Fuzzy Dark Matter Mass Mystery***
235$^{th}$ AAS Meeting (Hawai'i Convention Center, Honolulu, HI)

## Activities

Nov.'21 – present **Interviewer & Ambassador**, *Princeton University Undergraduate Admissions*
Conduct interviews with prospective Princeton University students and produce reports on each interviewee to aid in the undergraduate admissions process. **Total interviews conducted: 12**

Nov.'21 – Mar.'22 **Journal Club Coordinator**, *Institute of Astronomy, Cambridge*
Organiser for the bi-weekly undergraduate journal club for final year undergraduates and masters students.

Jan.'17– Jan.'18 **Director & Volunteer**, *Princeton Envision (Entrepreneurship Club)*
Assisted in organising, promoting and managing Envision Conference: an annual conference held over 3 days in December that brings 200 competitively selected students from universities across the world together with top researchers, entrepreneurs, and professionals to attend lectures and workshops discussing the disruptive technologies such as artificial intelligence and space travel.

Sep.'17– Mar.'20 **Library Assistant**, *Princeton University Architecture Library*
Duties included but were not limited to: circulation services, reserves, shelving, shelf reading, with other duties as directed by the librarian.

Dec.'16– Sep.'17 **Peer Reviewer**, *Princeton Undergraduate Research Journal*
Assisted in the peer reviewing process for the Princeton Undergraduate Research Journal (PURJ), Princeton's first peer-reviewed academic journal, highlighting top-quality research performed by Princeton undergraduates across all academic pursuits, including the natural sciences, humanities, engineering, social sciences, and arts.

## Awards & Academic Programmes

Oct.'21 – Apr.'25 **STFC PhD Studentship**
Cambridge, UK
Full funding for 3.5 years to complete PhD at the Institute of Astronomy, University of Cambridge.

Sep.'16 – Jun'20 **Full-ride Academic Scholarship**
Princeton University, USA
Various financial aid packages covering all tuition fees and living costs to attend Princeton University in the Unites States for four years.

Mar.'15 – May.'16 **Sutton Trust USA Programme**
London, UK
One of 150 selected from 1600 high achieving low-income, first-generation students to receive admissions guidance for applying to the top universities in the US.

Jul.'15 **UNIQ Summer School**
University of Oxford, UK
One of 36 Sixth Form students selected to attended the Oxford University Physics UNIQ Summer School.