



## Biography

I am a motivated and dependable individual with strong communication, teamwork, and leadership skills. I hold an M.Sc. in Astrophysics with distinction from the University of Cape Town (UCT), and am pursuing a PhD under the supervision of Prof. Dunsby at UCT. My masters research focused on structure formation, perturbation theory, and modified gravity, and my research interests lie in investigating early-universe cosmology and the dark sector using machine learning methods. I have extensive leadership experience, including serving as Chair of UCT ParaSport and an executive member of the Student Sports Union (SSU) in the transformation portfolio. Additionally, I have over five years of science communication experience, engaging the public through lecturing at the Iziko Planetarium and the Cape Town Science Centre.

## Work experience

### Researcher

2020 - present

Department of Mathematics and Applied Mathematics  
University of Cape Town

Most recently I have undertaken research for a paper on large-scale structure constraints for a generalised  $f(R)$  theory of gravity, its gauge-invariant perturbations, and associated power spectra. I am currently working on another paper using computational methods to compare the results with data.

### Planetarium operator

2019 - present

Iziko South African Museum

I am responsible for running shows for the public at the Iziko Planetarium. During the shows I provide 20-minute astronomy lectures and answer audience questions.

### Tutor

2022 - present

University of Cape Town | Self

In 2023 I tutored astronomy honours students in spectroscopy and third-year maths students in general relativity. This includes facilitating tutorials, marking homework, and supervising observations and tests. I previously tutored first-, second-, and third-year astronomy. I currently tutor high-school physical sciences and mathematics.

### Science Communicator

2024

Cape Town Science Centre

I have given several talks on black holes at the science centre, and participated in their Women in STEM event in August.

### Head of Transformation

2019 | 2022 - 2023

Student Sports Union  
University of Cape Town

I headed up the transformation portfolio on the SSU executive committee. During my first term, I introduced the Learn to Swim program, orchestrated workshops, and ran an awareness campaign that allowed us to start the UCT ParaSport Club in 2020. At the end of my term I constructed the UCT Sports Transformation Booklet, which was presented to the Vice Chancellor. In my final term I continued to host workshops on mental health, disability, gender and sexuality; run athlete showcases; and organise donation drives. Over the course of 2023, I accrued approximately 300 hours of volunteer service in transformation and parasport.

## Jess Worsley

M.Sc. Astrophysics

- ▶ PhD candidate at University of Cape Town
- ▶ Operator at Iziko Planetarium
- ▶ Maths & physics tutor

## Skills



## Education

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**2022 - 2025**

**Masters (M.Sc.)**

**Coursework + dissertation  
(both with distinction)**

University of Cape Town

*Astrophysics & Space Science*

Masters thesis: "A  $f(R)$ esh Take on Gravity".

**2021**

**First Class Honours  
(B.Sc. Honours)**

University of Cape Town

*Astrophysics & Space Science*

Honours thesis: "Astronomical Anomaly Detection with Machine Learning".

**2016 - 2020**

**Bachelor of Science (B.Sc.)**

University of Cape Town

*Astrophysics*

Bachelor's thesis: "Investigating Fast Radio Burst Hosts"

## Publications

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- MacDevette, K., Worsley, J., Dunsby, P., & Chakraborty, S. (2025). A model-independent approach to the study of structure growth in  $f(R)$  gravity. *Monthly Notices of the Royal Astronomical Society*. Presented at the South African Gravity Society conference, Stellenbosch University, 19 August, 2024.
- Worsley, J. "Crash Course in Cryptocurrency". *Varsity News*, 27 March, 2018.
- Worsley, J. "The All-unnatural Diet". *The Kathmandu Post*. 11 March, 2017.

## Awards

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- Student Leadership Award, 2023.
- Student Leadership Team Award (ParaSport), 2023.
- Student Leadership Team Award (SSU), 2023.
- Second place at the BITDN Regional Hackathon, 2022.
- Washkansky, Manuel and Luby Scholarship, 2022
- Student Leadership Team Award (SSU), 2022.
- Student Leadership Award, 2019.
- Student Leadership Team Award (ParaSport), 2019.
- UCT Sports Colours, 2019
- Turpin Cup for Service to Sport, 2019.
- UCT Merit Award for Sports Administration, 2018.

## Contact

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## References

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<b>Name</b>	<b>Peter Dunsby</b>	<b>Ofentse Letebele</b>
<b>Company</b>	University of Cape Town	Iziko Planetarium
<b>Relationship</b>	Supervisor	Employer
<b>Contact</b>	peter.dunsby@uct.ac.za	oletebele@iziko.org.za

Signed, 1st February 2026

J Worsley