

Dr. Rebecca Louise Davies

ARC DECRA Fellow, Swinburne University of Technology

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POSITIONS	Swinburne University of Technology	
	ARC DECRA Fellow (Level B)	2024 – present
	Postdoctoral Research Fellow (Level B)	2023
	Postdoctoral Research Associate (Level A)	2020 – 2022
	Gemini South Observatory	
	Australian Gemini Undergraduate Summer Studentship	Dec 2013 – Feb 2014
EDUCATION	Australian National University	
	Research Assistant to Prof. Lisa Kewley	Jan – Feb 2013, Jan – Jul 2016
	Ludwig-Maximilians-Universität München	2016 – 2020
	Dr. rer. nat. (Doctor of Natural Sciences), Faculty of Physics	
	<u>Thesis</u> : <i>Feedback in Galaxies During the Peak Epoch of Cosmic Star Formation Activity and Black Hole Growth</i>	
	<u>Supervisor</u> : Dr. Natascha Förster Schreiber	
SELECTED GRANTS & PRIZES	Australian National University	2012 – 2015
	Bachelor of Philosophy (Honours), First Class Honours with the University Medal in Astronomy and Astrophysics	
	<u>Thesis</u> : <i>New Perspectives on AGN Host Galaxies From Integral Field Spectroscopy</i>	
	<u>Supervisor</u> : Prof. Lisa Kewley	
	<i>My excellence in research has been recognised through the following grants and awards with a total value of AUD\$490,000:</i>	
	ARC Discovery Early Career Researcher Award 2024 (AUD\$441,700)	2023
“Galactic Outflows: Pushing the Distance Frontiers”		
ASTRO 3D Conference & Workshop Funding (AUD\$15,000)	2022	
Funding for the international conference “New Views on Feedback & the Baryon Cycle in Galaxies” held July 17-21 2023, for which I was co-chair.		
Gruber Foundation Fellowship (US\$25,000 or AUD\$32,500)	2021	
Research grant awarded by to the IAU to “extremely promising early career astrophysicists”, with up to 3 grants awarded globally each year.		
Harvard-Smithsonian Travel Grant (US\$500 or AUD\$670)	2020	
Funding for travel to Harvard CfA to give a Galaxies & Cosmology Seminar		
University Medal, Australian National University	2015	
For exceptional academic excellence throughout an Honours Degree program		
Australian Gemini Undergraduate Summer Studentship	2013 - 2014	
10 week Research Internship at the Gemini South Headquarters in Chile		
OBSERVING PROGRAMS	<i>I have been very successful in obtaining competitive observing time, with PI and CoI programs valued at an estimated AUD\$300K and AUD\$800K respectively:</i>	
	PI Programs:	
	<u>JWST</u> Cycle 3 (18 hours NIRSpec primary, 12 hours NIRCам parallel): <i>Feedback and quenching: separating neutral gas in outflows and galaxies at $z \approx 2$</i>	
	<u>Keck</u> 2024A (2 nights): <i>An Unbiased Survey of Neutral Outflows at the Peak Epoch of Star Formation</i>	

ANU 2.3m Telescope (5 nights): *An Integral Field Study of Seyfert-LINER and LINER-HII transition objects*

Co-I programs

JWST Cycle 3 (PI: Aravena, Medium Program, 32 hours NIRSpec primary):
ORCHIDS: ORigin of the [CII] Halos in Distant Systems

JWST Cycle 1 (PI: Belli, Medium Program, 46 hours NIRSpec primary, 36 hours NIRCам parallel): *The Stellar and Gas Content of Galaxies at Cosmic Noon*

VLT/MUSE (PI: Farina, Large Program, 81 hours): *The cosmic Ecosystem of the first QSOs and Galaxies: a MUSE/XSHOOTER/JWST/ALMA Legacy Survey*

ALMA Cycle 8 (PI: Herrera-Camus, Large Program, 153 hours): *CRISTAL: a survey of gas, dust and stars on kiloparsec scales in star-forming galaxies at $z\sim 4-5$*

SUPERVISION
& TEACHING

I have (co-)supervised 6 PhD, Honours and Vacation students and completed a semester of teaching as lecturer/tutor for an undergraduate astronomy course:

Primary Supervisor (4 students):

Patricia Arens (PhD, Swinburne) *commencing 2024*

Aston Quin (Honours, Swinburne) *Jan 2024 – present*

Stephanie Rowlands (Honours part time, Swinburne) *Aug 2022 – present*

Stephanie's thesis was awarded a HD. She will finish her coursework in 2024.

Jennifer Shi (Vacation Scholar, Swinburne) *Nov 2021 – Feb 2022*

Jennifer is pursuing a Masters in Astrophysics at the University of Melbourne.

Co-Supervisor (4 students):

Tahlia Hill (Honours, Swinburne) *2024 – present*

Tahlia Hill (Vacation Scholar, Swinburne) *Dec 2023 – Feb 2024*

Alma Sebastian (PhD, Swinburne) *2022 – present*

Peixin Zhu (PhD, ANU/Harvard) *2021 – present*

Aman Chopra (Honours, ANU) *2021*

Aman's thesis was awarded a HD and he now works for Geoscience Australia.

Tutor & Guest Lecturer AST10001, Discovering the Universe (1st year) *2023*

External Masters Thesis Examiner (QUT) *2022*

Swinburne Work Experience Facilitator *2023*

Member of 3 Swinburne PhD Student Review Panels *2021 – present*

Private Physics and Mathematics Tutor *2012, 2015 – 2016*

SERVICE &
PROFESSIONAL
INVOLVEMENT

I actively contribute to the astronomy community through committee service, proposal reviews, conference organization and membership of professional bodies:

University Committees:

Swinburne Time Allocation Committee for Keck (STACK)

Technical Secretary *2023 – present*

Postdoc Member *2021*

Swinburne Keck Room Operations Coordinator (KROC) *2021 – 2023*

Swinburne Visiting Fellow Selection Panel *2023*

Swinburne CAS PhD Student Interview Panel *2023*

MPE IMPRS Student Representative *2016 – 2019*

External Committees and Expert Review

AAT Time Allocation Committee (ATAC) *2024 – present*

ASTRO 3D EDI Committee *2024 – present*

ASTRO 3D Junior Early Career Researcher Committee *2021 – 2022*

External Expert Reviewer for JWST Cycle 2 Proposals *2023*

Distributed Peer Review of Observing Proposals (ALMA, ESO) *2022 – present*

Scientific Referee for A&A, ApJ, and MNRAS 2015 – present

Conference/Workshop Organization:

Co-chair of the international conference *New Views on Feedback and the Baryon Cycle of Galaxies* (Healesville VIC) 2023
Organizing Committee, ASTRO 3D Academic Applications Workshop 2021
LOC member for the conference “In Situ View of Galaxy Formation” 2016
SOC member, 2014 Harley Wood Winter School 2013 – 2014

Professional Organizations

Junior Member, International Astronomical Union (IAU) 2022 – present
Full member, Astronomical Society of Australia (ASA) 2022 – present

SELECTED
CONFERENCE
TALKS

I have presented 35 talks at national and international conferences, including 3 invited talks in 2023. Talks given in the last 3 years are listed below:

Invited Lorentz Centre Workshop: Synergistic ALMA+JWST view of the early Universe Dec 2024
Invited CGM-Chile 2024 Nov 2024
Invited ELT Science in Light of JWST Jun 2024
Metal Production and Distribution in a Hierarchical Universe – II Nov 2023
Galaxy Transformation Across Space and Time Sep 2023
Asia-Pacific Regional IAU Meeting Aug 2023
AMACAR Gas in Galaxies Jul 2023
Invited New Views on Feedback and the Baryon Cycle of Galaxies Jul 2023
Invited Shedding new light on the first billion years of the Universe Jul 2023
[Annual Meeting of the Astronomical Society of Australia](#) Jul 2023
First Light - showcasing first results on the early Universe from JWST Jun 2023
Invited American Physical Society April Meeting "Quarks to Cosmos" Apr 2023
[Charting the Metallicity Evolution of the Universe](#) Sep 2022
Gas2022: What Matter(s) around Galaxies Sep 2022
A Holistic View of Stellar Feedback and Galaxy Evolution Jul 2022
[Large-Volume Spectroscopic Analyses of Galaxies in the Era of JWST](#) Mar 2022
Annual Scientific Meeting of the Astronomical Society of Australia Jul 2021
EAS: S10 (Black Hole Accretion) and S7 (Quasars at the EoR) Jul 2021
[Past, Present and Future of Galaxy Evolution](#) Apr 2021

SELECTED
SEMINARS

I have presented 19 colloquia and department seminars spread across Australia, Japan, the UK, Germany, the US, Chile, and Brazil, including 5 invited seminars. Seminars given in the last 4 years are listed below:

Invited Australian National University Mar 2024
Australian National University, University of Sydney, University of NSW, and Macquarie University Oct 2022
Invited Colloquium, University of Melbourne Aug 2021
Invited AGN Webinar, IAG, USP (Universidade de Sao Paulo, Brazil) Jul 2021
Invited Colloquium, Osaka University Jun 2021
Invited Galaxies & Cosmology Seminar, Harvard-Smithsonian CfA Feb 2020

MENTORING,
OUTREACH,
DEI

I am passionate about inspiring the next generation of scientists and am actively involved in outreach and mentoring programs:

Interview for Astrophiz Podcast: Galactic Outflows Nov 2023
Swinburne/CAS: Public Talk and Telescope Viewing May 2023
Guest appearance on Clubhouse App (Quantum Photonics) Mar 2023
1.5 hr public presentation + Q&A. Recording and Slides available.

Curious Minds STEM Mentor Program 2020 – 2022

Mentored 3 female high school students (Year 9-10) from rural areas to undertake personal interest projects in astrophysics and space exploration. This included curating learning materials at an appropriate level for the students.

School Q&A Session 2021

Addressed a primary school class (remotely) on the ethics of space travel.

Outreach, Max Planck Institute for Extraterrestrial Physics 2016 – 2020

- Assisted at events including *Girls Day* and *Tag der Offenen Tür* (Open Day)
- Ran guided tours for visiting student groups

Student Ambassador, ANU CPMS 2013-2015

- Helped at Science & Engineering Challenge, Maths Day
- Represented ANU at Open Days and Careers Expos
- Helped coordinate the ANU World Record Stargazing event in August 2015

ANU Black Hole Society (1st Year Rep, Secretary, President) 2012 – 2015

- Ran outreach events for National Science Week and the transit of Venus
- Coordinated a public lecture series and oversaw events planning for the society

SELECTED
MEDIA

My research and achievements have been featured in many articles from both mainstream and University media:

Universe Today article about results from Davies et al. (2023c, under review):
Supermassive Black Holes Shut Down Star Formation During Cosmic Noon 2023

ASTRO 3D Press Release for Davies et al. (2023b): [Tracing 13 billion years of cosmic history by the light of ancient quasars](#) 2023

Also released by *Science in Public*, *University of Cambridge*, *INAF* (Italian)

Featured in 16 English articles: *CareerSpot*, *COSMOS magazine*, *Innovation News Network*, *Mirage*, *The National Tribune*, *News Beezer*, *News Trackerz*, *Phys.org*, *Protect and Love Pets*, *Researchnews*, *Sci News*, *Science Springs*, *Space Daily*, *Tech Explorist*, *Universe Today*, *University of Sharjah*

23 international articles in 7 languages: Dutch: *Astronieuws.nl*,

allesoversterrenkunde.nl, *astroblogs*, *Zenit*, French: *Futura*, *free*, German: *scinexx*

Italian: *Esquire*, *Global Science*, *Meteoweb*, Portuguese: *msn.com*, *Planeta*

Spanish: *Cosmo Universitario*, *Cronica*, *Diario Estrategia*, *Europapress*, *ferplei.com*, *invdes.com*, *La Nacion*, *Notimerica*, *Publimetro*, *La Vida*, Turkish: *teknomers*

ASTRO 3D Monthly Media: Probing the outskirts of galaxies with quasars 2022

Description of work by 2021-2022 ASTRO 3D vacation scholar Jennifer Shi

AAL ESO Blog: KMOS and SAMI Reveal the Mechanisms Governing the Electron Density in Star-Forming Regions across Cosmic History 2021

Women Astronomers Day: [Swinburne celebrates women astronomers](#) 2021

ANU Student Profile: 2015

Article: <https://rsaa.anu.edu.au/study/student-profiles/rebecca-davies-0>

Interview: <https://www.facebook.com/watch/?v=10153659689781294>

AGUSS Studentship: 2014

Refraction media: <https://careerswithstem.com.au/student-exchanges/>

Blog post:

<https://aat.anu.edu.au/science/students/gemini-summer/experiences#rebecca>