



OzGrav
ARC CENTRE OF EXCELLENCE FOR
GRAVITATIONAL WAVE DISCOVERY

SPACE TIMES

September 2026

OzGrav in the Media

New measurement of
the Universe's expansion

Three branches of the
black hole family tree

A new way to study the
event horizon

Featured stories

OzGrav ECRs explore Japan
& KAGRA

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Work

Faces of OzGrav: Iris de Ruiter, 2026 Gruber Foundation Fellow



Welcome to the September edition of Space Times!

The stories in this issue demonstrate how gravitational-wave science continues to develop through new discoveries, innovative ideas and collaboration across institutions and countries.

Our researchers are investigating some of the most fundamental questions about the Universe, from its rate of expansion and the origins of different black hole populations to the extreme physics surrounding event horizons. Alongside these research advances, OzGrav members continue to share their knowledge through outreach, education and engagement with communities across Australia and beyond.

This edition also highlights the recent OzGrav-KAGRA Early Career Researcher School in Japan. By bringing emerging researchers together to exchange ideas, develop new skills and build professional relationships, initiatives such as this help strengthen the international community on which our field depends.

I also congratulate the many OzGrav members recognised through awards, fellowships and other achievements in recent months. These successes reflect the talent, dedication and broad contributions of our community.

Thank you to everyone who contributed to this edition. I hope you enjoy reading it.

Professor Matthew Bailes, Director, ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav)

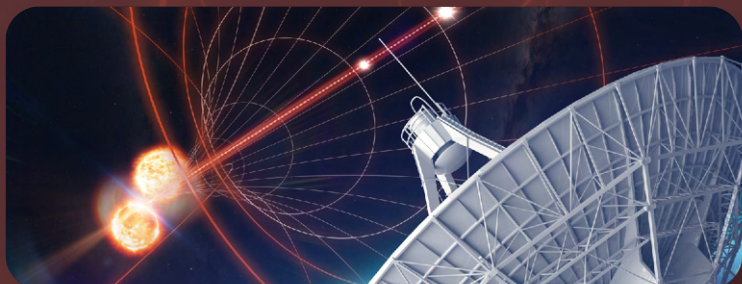
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New measurement brings us closer to understanding the Universe's rate of expansion

Researchers closely observing the fiery aftermath of an immense cosmic collision have made a new measurement of the speed at which the Universe is expanding.



GW170817 Jet Afterglow. Credit: Carl Knox, Swinburne University/OzGrav

The international team led by researchers from the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) at Swinburne University of Technology and CSIRO, Australia's national science agency, combined telescope and gravitational wave data in an attempt to unlock the true value of the Universe's expansion, called the Hubble Constant.

Knowing how fast the Universe is expanding is extremely important, as it helps scientists to determine how large or far away objects are, the role of dark matter in the evolution of the Universe, as well as the Universe's origin and ultimate fate.

Two existing measurements of the Hubble Constant have split cosmologists for more than a decade.

Lead researcher, OzGrav Partner Investigator and CSIRO's Dr Kelly Gourdji, said the two independent measurements are described as the 'Hubble tension'.

"One method uses data from the very early Universe the cosmic microwave background radiation – to make the measurement, while the other uses measurements from relatively nearby supernovae, making it data from the late Universe," Dr Gourdji said.

These precise measurements disagree with one another: either one measurement is wrong, or our understanding of the physics that govern the Universe is wrong, leaving the true nature of the Hubble Constant shrouded in mystery.

"Our independent measurement using gravitational waves is a late Universe method, but the result is more consistent with the early Universe value," Dr Gourdji said.

The dramatic collision of two neutron stars, which was visible to telescopes and caused a gravitational wave to be detected on Earth, provided an opportunity for the team to take this new measurement.

After black holes, neutron stars are the densest objects in the Universe with a huge amount of mass in a very small area. This density creates an intense gravitational field, more than 100 billion times stronger than the gravitational field on Earth.

The collision between these neutron stars was so powerful that it sent ripples through space and time – gravitational waves – whilst also sending jets of energetic particles into space.

Professor Adam Deller, OzGrav Chief Investigator from Swinburne University of Technology, who led the radio observations used in the research, said the jets caused by the collision were essential to making the measurement.

"These jets are launched for only a couple of seconds, but as they slam into the surrounding gas, they glow for months afterwards. We analysed almost a year of observations from the Hubble Space Telescope and two different arrays of radio telescopes spread across the USA and Europe," Professor Deller said.

By combining all the data, the team revealed a new value for the Hubble Constant which, while not as precise as the more established measurements that underpin the Hubble tension, is more accurate than previous attempts made using gravitational waves. This is the strongest indication yet that gravitational waves could settle the debate.

Professor Deller said that the finding was significant.

"Some astronomers had proposed ways in which both measurements could be correct if our understanding of cosmology was changed – but our measurement argues quite strongly against that solution," explained Professor Deller.

Dr Gourdji said more observations would be needed to confirm the finding.

"This would suggest that there is not something wrong with our understanding of cosmology, though we'll need to examine more neutron star mergers like this one to be sure. For now, this result adds another data-point for cosmologists to consider in the lively Hubble tension debate," said Dr Gourdji.

Kelly Gourdji, CSIRO/OzGrav



Adam Deller, Swinburne/OzGrav



New measurement bring us closer to understanding the Universe's rate of expansion. Find at: ozgrav.org, June 2026.



OzGrav ECRs explore Japan & KAGRA

Celebrating the 50th anniversary of the Australia–Japan Basic Treaty of Friendship and Cooperation through science, cultural exchange and collaboration.

Young gravitational-wave researchers from Australia and Japan came together in Kanazawa to exchange scientific ideas, experience each other's cultures and build the relationships that will shape the future of international science.

As Australia and Japan celebrate the 50th anniversary of the Basic Treaty of Friendship and Cooperation, a new generation of scientists is helping carry that relationship forward.

Signed in Tokyo in 1976, the Treaty established a foundation for enduring friendship, mutual understanding and cooperation between the two countries. Fifty years later, those principles continue to be reflected in the research partnerships, cultural exchange and people-to-people connections linking Australia and Japan.

Early career researchers in gravitational-wave science and astrophysics from universities and research institutions across Australia and Japan gathered in Kanazawa for the Joint OzGrav–KAGRA Early Career Researcher School. The group included researchers connected with Australia's ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav), the KAGRA collaboration, the Institute of Science Tokyo, the University of Tokyo and other institutions across both countries.

The school brought together cutting-edge gravitational-wave science, professional development and cultural exchange, giving emerging researchers from both countries the opportunity to learn from one another and form relationships early in their careers.

Gravitational-wave science is international by nature. Detecting tiny ripples in spacetime requires observatories, researchers and institutions around the world to work together. The school helped participants see that collaboration not only as a scientific necessity, but as something built through trust, communication and shared experience.

For many of the Australian participants, travelling into the mountains of Gifu Prefecture and entering KAGRA's kilometre-scale underground tunnels brought the science they study to life. They saw the extraordinary engineering required to detect movements far smaller than the width of an atom and met the scientists and engineers working directly on the observatory.

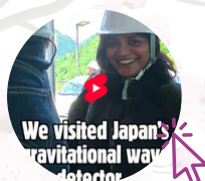
Across the four-day program, participants explored gravitational-wave theory, astronomy, detector instrumentation, data analysis, cosmology and fundamental physics through lectures, panels, workshops and poster presentations.

But we wanted the school to be more than a technical conference.

Scientific careers are also shaped by the ability to communicate ideas, work across disciplines and cultures, and keep going when research does not unfold as planned. Workshops explored storytelling, improvisation and scientific presentations, while a candid session on research failures encouraged participants to share experiences of rejected papers, unsuccessful experiments, coding problems and the uncertainty behind scientific progress.

There was something powerful about seeing young researchers realise they were not alone in those experiences.

Watch highlights from our visit here:



Article written by Diana Haikal Swinburne/OzGrav. Read the full article at ozgrav.org, 2026



Scientists uncover three branches of the black hole family tree

For a decade, gravitational-wave observatories have been detecting collisions between black holes across the Universe. Now, after analysing more than 150 binary black hole mergers, researchers have found evidence that these collisions can be divided into at least three distinct families, each with different characteristics and potentially different origins.

The study, led by postdoctoral fellow Dr Sharan Banagiri from the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) and Monash University, analysed the growing catalogue of gravitational-wave detections from the international LIGO–Virgo–KAGRA (LVK) Collaboration. Researchers found that black holes appear to cluster into three subpopulations, separated by distinct mass ranges and characterised by different spin and pairing behaviours.

The findings, published in Physical Review Letters, suggest that the Universe may not produce merging black holes through a single dominant process, as many researchers once expected.

“The population of binary black holes that we are discovering is complex enough that we cannot easily say it looks like one formation channel is making the vast majority of black holes,” Dr Banagiri said. Black holes can form in a variety of environments. Some might originate from pairs of massive stars born together that eventually collapse into black holes and merge. Others may form in dense stellar clusters where black holes dynamically capture one another, while some may grow through repeated mergers over time.

The challenge for astronomers is that they cannot directly observe how individual black holes formed. Instead, they must work backwards from the mergers they detect through gravitational waves.

Dr Banagiri compares the problem to finding a pile of leaves on the ground and trying to work out the different kinds of trees they came from without looking at the trees themselves.

“You can look at the leaves and say maybe that’s a maple, maybe that’s a cherry tree. By the shape and geometry of the leaves, you can roughly say there are four kinds of trees contributing to this pile of leaves.”

What researchers do is very similar. By analysing a large catalogue of black hole mergers, they can identify patterns in the data and group black holes with similar characteristics into distinct subpopulations.

Based on these characteristics, the analysis revealed three distinct subpopulations of merging black holes, separated by mass: one below about 28 times the mass of the Sun, a second between roughly 28 and 40 solar masses, and a third above 40 solar masses.

The most massive black holes appear to spin faster and pair differently from their lower-mass counterparts.

“Smaller black holes in binaries are relatively slower spinning, and they like to pair with other black holes that are roughly the same mass,” said Dr Banagiri. “Black holes that are already high mass, greater than 40 solar masses, spin faster and they like to pair with something that’s less massive.”

One possible explanation is that some of the most massive black holes are themselves the products of earlier black hole mergers. In this scenario, known as hierarchical merging, a black hole formed in a previous merger later merges again, creating progressively larger black holes.

While the new results are consistent with that picture, the researchers stress that more observations will be needed before any individual formation pathway can be confirmed. “The main discovery is that you can statistically separate the detections into different clusters,” said Dr Banagiri.

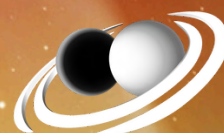
“There are very interesting clues that are starting to become visible, but that link is not yet fully clear.” The work highlights how gravitational-wave astronomy is entering a new phase. Rather than simply detecting black holes, researchers are beginning to study their demographics and evolutionary histories.

The findings do not change scientists’ understanding that black holes form when massive stars collapse. Instead, they provide new clues about what shapes the characteristics of black holes throughout their evolution.

As gravitational-wave detectors continue to improve and future observing runs deliver hundreds or even thousands more detections, researchers hope to refine the emerging picture of how black holes form and evolve across the Universe.



Scientists uncover three branches of the black hole family tree. Find it at Ozgrav.org, July 2026.



Scientists Find a Way to Study the Event Horizon Where Light & Sound Are Swallowed for Eternity

An international team of scientists from the LIGO, Virgo, and KAGRA collaborations, including researchers from the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav), has detected two remarkable black hole collisions that are offering new insights into both the evolution of the cosmos and the nature of dark matter.

If, in space, no one can hear you scream – it seems that you can actually hear the sound of a crash when two black holes collide.

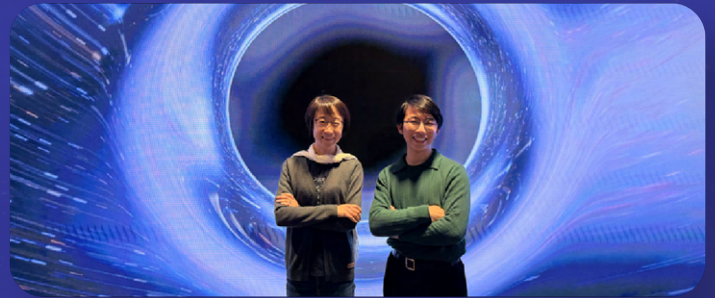
Using the loudest gravitational wave ever heard, two Australian scientists and colleagues have been the first to witness the previously elusive “event horizon” – at the actual moment of collision, right before all light and sound are swallowed by the newly formed black hole for eternity.

The discovery and the novel way to analyze the data, published in *Nature*, provide a new observational window onto the region closest to a black hole’s event horizon where quantum physics and theories of general relativity intersect.

The study, led by Dr Ling (Lilli) Sun and PhD candidate, Mr Neil Lu, from the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) and the Australian National University, as well as colleagues in Canada, the US, and Spain, opens the door for astrophysicists globally being able to observe the previously elusive event horizon of a black hole.

“We measured the last sound the black holes made when they crashed. Hidden within that signal is a small component, called direct waves, that had not previously been well understood,” said Mr Lu. “Our new analysis allows us to decipher this component and extract unique information from close to the event horizon.”

The event horizon is the boundary around a black hole beyond which nothing can escape, not even light. At this boundary, the speed required to break free from the black hole’s gravity equals the speed of light. Since nothing in the universe travels faster than light, anything that crosses the event horizon is permanently trapped.



Dr Ling (Lilli) Sun and PhD candidate, Neil Lu, from the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) and the Australian National University.

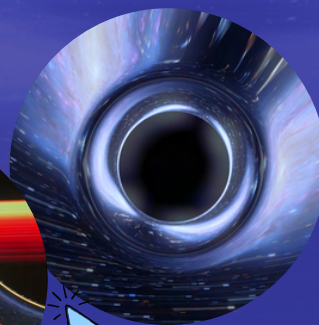
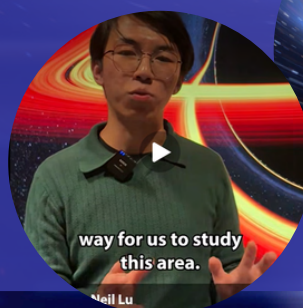
The scientists studied the gravitational-wave signal GW250114, recorded last year, the loudest yet, using the two Laser Interferometer Gravitational Wave Observatories in the United States.

According to Dr Sun, black holes are extreme objects that sit at the intersection of general relativity and quantum theory.

“We studied GW250114, the loudest binary black hole signal observed to date, about three times louder than the first gravitational-wave signal detected a decade ago,” said Dr Sun. “Our analysis shows that this exceptionally loud signal can be used as a powerful probe of the remnant black hole’s horizon, allowing us to measure its two fundamental properties: rotation frequency and surface gravity.”

“These measurements mark a first step towards future tests of general relativity with direct waves,” Mr Lu added.

The new analytical technique developed by Mr Lu, Dr Sun, and their collaborators means that astrophysicists will be able to study the strength of extreme gravity at the black hole’s horizon, and phenomena like frame dragging where black holes literally drag along the fabric of spacetime nearby, creating an environment where nothing is able to remain stationary relative to a distant observer like ourselves.



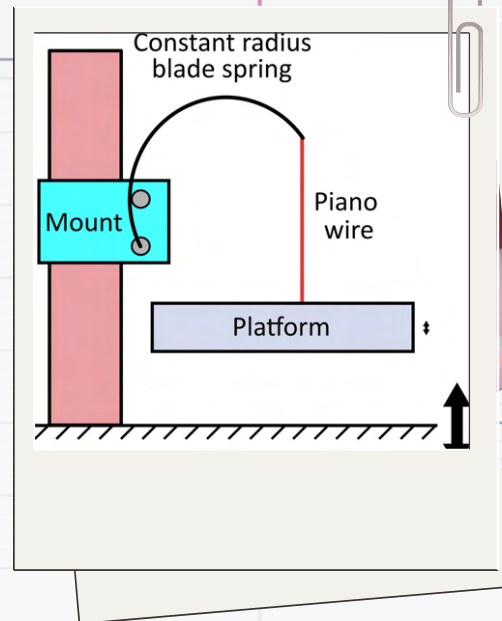
Scientists Find a Way to Study the Event Horizon Where Light & Sound Are Swallowed for Eternity. Find at: ozgrav.org, 2026.



Vibration isolation with constant curvature blade springs

Gravitational-wave detectors require state-of-the-art vibration isolation to measure ripples in spacetime smaller than one-thousandth the diameter of a proton. These instruments rely on mirrors that must remain almost perfectly motionless despite constant vibrations from the ground. This is achieved using sophisticated suspension systems that isolate optical components across a broad frequency range.

In a paper recently published by OzGrav researchers at the University of Western Australia, titled **"Constant Radius Blade Spring Suspended Bench for Vibration Isolation"**, lead author and PhD student Koh A. Baker, together with collaborators John Winterflood, Carl Blair, Chiara Di Fronzo, Li Ju, and Chunnong Zhao, present a compact, passive isolator for isolating high-precision optical experiments. These experiments are pioneering new techniques to improve current/future gravitational wave detectors.



The design suspends a platform using four thin pieces of metal, known as cantilever blade springs. Each blade was machined from a flat sheet with a carefully defined profile so that, under load, it bends into a constant radius of curvature. Blade springs are a common technique for isolating vertical vibrations, but are prone to cross-coupling vertical motion into horizontal motion if not carefully designed. Cross-coupling is a common problem in vibration isolation, where energy from one direction leaks into another, undermining the isolation the system is designed to provide. Their constant radius design gets around this by keeping the tip of the blade moving predominantly straight up and down, rather than sweeping horizontally.

For this study, the team optimised the blade spring geometry using finite element modelling to achieve a broad frequency range of isolation. These predictions were then tested with a working prototype on a shaker table fitted with sensitive motion sensors (geophones), and the results closely matched the models.

During this process, the researchers made an unexpected discovery. While the constant radius blade design is excellent at suppressing cross-coupling for low-frequency vibrations, this advantage degrades as vibration frequency increases. At higher frequencies, the blade itself begins to flex in more complex ways, allowing some of the unwanted horizontal motion to creep back in. The team compared these results with those of a more complicated pre-bent blade design, which is flat when loaded, and showed that it retains its low cross-coupling advantage over a wider frequency range.

This creates a practical trade-off for anyone building similar isolation systems. The constant radius blade offers a simple, low-cross-coupling solution at low frequencies, while a pre-bent design is better at minimising cross-coupling over a broader range of frequencies.

Looking forward, the team plans to add magnetic damping techniques to the suspension to enhance isolation performance further. This work offers useful insight for scientists and engineers building compact, high-precision instruments, from tabletop optical experiments to the next generation of gravitational wave observatories.



Article written by Koh Baker, UWA/OzGrav (2026)



Iris de Ruiter University of Sydney



Unlike many astronomers, I don't have a childhood story about staring up at the night sky and dreaming of the stars. Growing up, I was far more likely to be found on a football (or soccer, if you insist) pitch or an athletics track than with a telescope. Sport was a huge part of my life, and it still is. Running, going to the gym, and making sure I move every day helps keep me sane and often provides the space to work through whatever scientific puzzle has been occupying my brain.

My route into physics was more accidental than carefully planned. At school, I loved mathematics and, when it came time to choose a university degree, I figured I would give physics a crack. How hard could it be if the boys could do it? That turned out to be slightly optimistic, but I enjoyed the challenge enough to stick with it.



After a brief detour into particle physics during my Master's degree, I realised I simply liked the astronomy crowd more. I joined the Anton Pannekoek Institute for Astronomy at the University of Amsterdam for my PhD, where I began studying long-period radio transients (LPTs), a recently discovered and thoroughly puzzling class of astronomical objects. These sources produce bright bursts of radio emission every tens of minutes to hours, yet don't fit neatly into existing categories. We now know that at least some LPTs come from white dwarf binaries, but whether others are powered by neutron stars remains an open question. That mix of progress and mystery is what keeps me hooked.

Today I'm based at the University of Sydney, and Australia is an incredible place to do research. Outstanding facilities, excellent collaborators, and a genuinely supportive scientific culture make it a fantastic environment. Being part of OzGrav has made that experience even richer by connecting me with researchers across institutions and disciplines who are generous with their ideas, expertise, and enthusiasm.

In July, I attended the FRB conference in China with several fellow OzGravers to present my work on possible connections between fast radio bursts (FRBs) and LPTs. It was a great opportunity to exchange ideas with researchers from around the world and think more broadly about how these mysterious populations might be related.

Earlier this year, I was also honoured to receive a Gruber Fellowship. It will support new collaborations through research visits, opportunities to attend conferences beyond my immediate field, and a workshop on LPTs next year. I'm especially excited that the workshop will include travel support for early-career researchers, giving others the chance to build the same kinds of connections that have been so valuable to me.

What I enjoy most about science is that it combines difficult questions with persistence, creativity and collaboration. The discoveries are exciting, but the conversations and friendships that grow from our shared curiosity are just as rewarding. Science is fascinating, but it's the people we meet along the way who make this such a special community to be part of.



Pride Event at USyd



On Friday, 17 July, the University of Sydney OzGrav node organised a (slightly belated) Pride Month event, bringing members together for a thought-provoking visit to Qtopia Sydney, the world's largest centre dedicated to queer history and culture. Located in the Old Darlinghurst Police Station, the site holds deep significance as the primary place of detention for many of the original Mardi Gras participants, the 78ers. During our visit, we explored a range of fascinating exhibitions covering the history of Mardi Gras, the impact of the HIV/AIDS epidemic, celebrated queer icons, and the rich history of queer culture, community, and communication in Sydney.

Over lunch afterwards, we continued the conversation, reflecting on the histories and experiences we had learned about, celebrating hard-won progress, and reaffirming the importance of diversity and community. A big thank you to OzGrav for sponsoring this event and for its ongoing support of initiatives that promote awareness and inclusion.

Written by Iris de Ruiter,
USyd/OzGrav (2026)

Pride Event at Swinburne



On 27 June, around two dozen OzGrav members, friends and partners came together in Melbourne for an evening celebrating Pride Month through astronomy, queer stories and community.

The evening began at Melbourne Planetarium with Pride Month Stargazing, a special presenter-led show exploring LGBTQIA+ stories connected to the night sky, from queer histories and icons to stories hidden among the constellations. Afterwards, the group headed to Grazeland in Spotswood for food, drinks and conversation. Despite the cold winter evening, it was a relaxed chance to catch up outside the usual research environment, meet partners and friends, and make new connections across the OzGrav community.

The event complemented OzGrav's broader equity, diversity and inclusion activities with something deliberately informal and community-focused. Pride Month provided an opportunity to celebrate LGBTQIA+ members while bringing members and allies together through a shared experience connecting inclusion with astronomy. The strong turnout and enthusiastic response highlighted the value of creating different ways for our community to connect. Sometimes that can begin simply with sharing stories under the stars, followed by good food and good company.

Written by Yuzhe Song,
Swinburne/OzGrav (2026)

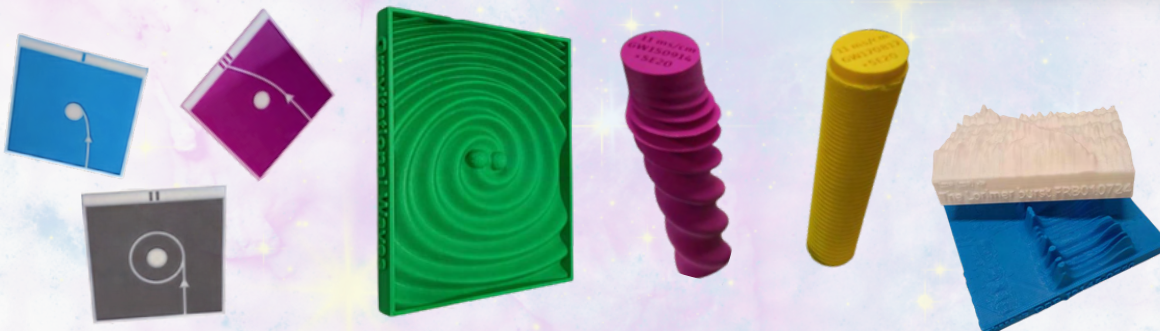


OUTREACH STORIES

It has been a busy few months for OzGrav outreach, with members engaging students and sharing gravitational-wave science with communities across the country. Here are some highlights:

New Outreach Resources for the Nodes

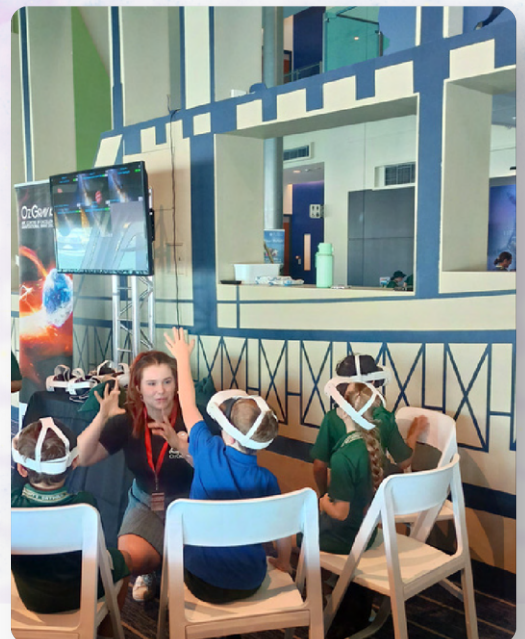
OzGrav's outreach kits are continuing to grow, with new resources being distributed to nodes around the country. Our 3D printer has been working hard producing **tactile gravity and gravitational-wave models**, while new **VR headsets** are being delivered to nodes, with the remaining headsets currently being programmed. We have also added tabletop gravity wells for public events and **laptops loaded with digital activities and facilitator guides**, making it easier for members to deliver OzGrav programs wherever they are.



Inspiring Future Physicists in Queensland

In May, Rowina Nathan and Rianna Bell led a full day of sessions for 70 senior secondary students at a Women in Physics event in Townsville. Both shared their research and personal pathways into science before introducing students to OzGrav and gravitational-wave research.

The event was followed by the Regional World Science Festival, hosted by Queensland Museum at the Museum of Tropical Queensland. These events kicked off a busy few months of outreach in the state, with the fantastic University of Queensland team supporting further activities in Brisbane, Toowoomba and Ipswich.



Physics Unboxed 2026

On 30 and 31 July, 325 high school girls from Sydney and regional NSW attended Physics Unboxed at the University of Sydney. Supported by OzGrav members, the two-day program encouraged students to continue studying physics and explore the wide range of careers available in STEM. The Ignite program introduced Year 9 and 10 students to topics including black holes, dark matter, nanoscience and quantum physics through talks, demonstrations and hands-on experiments. The Frontiers program gave Year 11 and 12 students an inside look at university study and research through laboratory tours, virtual astronomy and particle physics experiences, career panels and a live call with IceCube researchers in Antarctica. Student and teacher feedback was overwhelmingly positive, with many participants reporting a greater awareness of physics career pathways and increased interest in studying the subject at university.



Connecting Outreach Across the Astronomy Community

In July, Jackie Bondell attended the Astro Accel Innovation Summit in Lisbon, bringing together astronomy practitioners and education researchers from around the world. The network is already helping seed new OzGrav initiatives, including tactile and sonified gravitational-wave models, outreach training for early-career researchers working with underserved observatories, an Indigenous Student STEM Exchange, gravitational-wave data analysis activities for underserved students, and new outreach approaches for the International Pulsar Timing Array.



Written by Jackie Bondell,
Swinburne/OzGrav
(2026)



Join the Outreach Ambassadors

None of these initiatives would be achievable without the dedication and leadership of the OzGrav Outreach Ambassadors.

If you are a PhD student or postdoctoral researcher affiliated with OzGrav and are eager to enhance your science communication skills while motivating the next generation of scientists, we invite you to reach out to us. Discover more about becoming a part of the Outreach Ambassador program:

[JOIN NOW >](#)

Meet the OZGRAV OUTREACH AMBASSADOR

From planetariums in New Zealand to classrooms and outreach events in Australia, OzGrav Outreach Ambassador **Joshua Baines** has always loved sharing the wonder of the universe. We caught up with him to hear what he enjoys most about outreach, the physics concepts that fascinate him, and what he gets up to when he's not talking about space.

What inspired you to become an OzGrav Outreach Ambassador?

I love teaching! Back in New Zealand, I worked at a planetarium for 8 years. Seeing someone's face light up with awe as they learn about our amazing universe was one of my favourite things about the job, and it's something I never want to stop doing. So when I heard about the OzGrav Outreach Ambassador programme, I knew I had to jump at the opportunity.

What's your favourite thing to share with students or the public?

I love telling people about the vast scale of the universe and how small we are in comparison. I enjoy sharing how even light takes ~100,000 years to travel across our galaxy, so we are rather isolated, but we're not alone; we always have each other. If I haven't left people in a mild existential crisis after a talk, I haven't done a good enough job!

What's something people might be surprised to learn about you outside of science?

I play a competitive card game called "Flesh and Blood" at an international level. I've had the opportunity to play across Australia, New Zealand, Japan, South Korea, Europe and the USA. It gives me a good excuse to travel.

If you could bring one space or physics concept to every classroom, what would it be?

I would say time dilation. When I was in school, I was always fascinated by the concept of time, so my mind was blown when I first learned about time dilation in university. I would've loved to have seen it earlier.



Professor Susan Scott awarded prestigious Harrie Massey Medal

OzGrav Chief Investigator **Distinguished Professor Susan Scott** has been awarded the **2026 Harrie Massey Medal and Prize**, one of Australian physics' most prestigious honours. Presented jointly by the Australian Institute of Physics and the UK Institute of Physics, the biennial award recognises her groundbreaking contributions to general relativity, cosmology and gravitational wave science, as well as her leadership in Australia's participation in the first detection of gravitational waves. Susan is only the second woman to receive the Medal in its 36-year history.

A theoretical and mathematical physicist at The Australian National University, Susan leads the General Relativity Theory and Data Analysis Group. She played a **major role in establishing Australia's contribution to gravitational wave research** and was an Australian leader in the international team behind LIGO's historic first detection in 2015. Her ANU team contributed vital components to the data analysis system through which the first signal was processed.

"It really is a great honour to be awarded the Harrie Massey Medal jointly by the AIP and the IoP," Susan said. "Through OzGrav and our contributing universities, Australia now plays a leading role internationally in gravitational wave detection and gravitational wave physics. This is an achievement of which we can all be proud."

The Medal adds to Susan's extensive list of national and international honours, including the 2020 Prime Minister's Prize for Science, the Dirac Medal, the Thomas Ranken Lyle Medal and the George Szekeres Medal. She will present a plenary talk at the next AIP Congress, where the award will be presented in Sydney in December.

READ MORE:

- [OzGrav news article](#)
- [Australian Institute of Physics announcement](#)



OzGrav congratulates Professor David Blair AO on King's Birthday Honour

OzGrav is delighted to congratulate Professor David Blair, one of Australia's pioneering gravitational-wave physicists, on being appointed an Officer of the Order of Australia (AO) in the 2026 King's Birthday Honours.

Professor Blair was recognised for his distinguished service to physics, precision measurement science, gravitational-wave research and scientific education.

A founding figure in Australian gravitational-wave science, Professor Blair has spent decades advancing the technologies and scientific capabilities that helped position Australia as a global contributor to gravitational-wave astronomy. His work has inspired generations of researchers and played a significant role in shaping the field that ultimately led to the first direct detection of gravitational waves in 2015.

Throughout his career, Professor Blair has been a passionate advocate for science education and public engagement, helping to foster a deeper understanding of physics and astronomy among students, researchers and the broader community.

The recognition is a fitting tribute to a remarkable career dedicated to expanding humanity's understanding of the Universe and advancing Australian scientific excellence. Congratulations, David, on this well-deserved honour.



READ MORE:

- [Governor-General Announcement](#)
- [UWA Article](#)
- [Australian Academy of Science announcement](#)



OzGrav Associate Investigator Cullan Howlett Awarded the 2026 Pawsey Medal

Dr Cullan Howlett has been awarded the 2026 Pawsey Medal by the Australian Academy of Science, recognising his outstanding contributions to cosmology and his leadership in advancing our understanding of the Universe.

Dr Howlett is one of Australia's most exceptional cosmologists. His research, focused on assembling the largest and most complete map of our Universe ever made, has shaped our understanding of the fundamental forces and ingredients that make up the world around us. By analysing the distribution and motion of millions of galaxies, his work helps scientists test fundamental theories of gravity, investigate the nature of dark energy, and better understand how the Universe has evolved over billions of years.

He played key roles in the international Sloan Digital Sky Survey and Dark Energy Spectroscopic Instrument collaborations, with first-author papers in the top 1% most highly cited of the last decade and contributions to DESI's recent findings on potential time-varying dark energy, which are among the most cited physics papers of 2024 and 2025.

He also co-led the discovery of Ho'oleilana, a massive local 'bubble' of galaxies, and pioneered methods that have shaped current and future cosmological surveys. His research, leadership, mentoring and science communication reflect the excellence and impact recognised by the Pawsey Medal. Congratulations to Cullan on this well-deserved achievement.



READ MORE:

- [OzGrav news article](#)



ARTIC launches to strengthen research translation and impact



ARTIC
AUSTRALIAN RESEARCH TRANSLATION
AND INNOVATION CONSORTIUM

The **Australian Research Translation and Innovation Consortium (ARTIC)** officially launched in Sydney on 3 August, bringing together research leaders from Australia and New Zealand to strengthen collaboration and create clearer pathways from research to real-world impact.

The launch followed ARTIC's strategic workshop, attended by representatives from **20 Australian ARC Centres of Excellence and two New Zealand Centres of Research Excellence**, alongside leaders from industry, government and the broader innovation ecosystem. Founded by a group of ARC Centres of Excellence, with Swinburne University of Technology as co-founder and host institution, ARTIC provides an independent platform for centres to share expertise, build capability and address common translation challenges.

ARTIC Chair and OzGrav Director Distinguished Professor Matthew Bailes said the consortium would connect research capabilities more strategically and help create impact beyond individual centres. Nobel Laureate and OzGrav Associate Investigator Professor Brian Schmidt AC delivered the opening welcome, highlighting the value of collective expertise in supporting researchers with entrepreneurial ideas and connecting knowledge with the people and capital needed to achieve real-world outcomes.

Led by ARTIC Consortium Lead **Diana Haikal**, the consortium will focus on translation in all its forms, including new technologies, products and businesses, as well as changes in policy, practice and society. As ARTIC grows, it will expand its network across research, industry, government and innovation throughout Australia and New Zealand.



READ MORE:

- [ARTIC news article](#)
- [Swinburne University of Technology announcement](#)



Three OzGrav researchers awarded 2026 Future Fellowships

OzGrav congratulates Postdoctoral researcher **Dr Daniel Reardon** (Swinburne University of Technology), and Associate Investigators **Dr Manisha Caleb** (University of Sydney) and **Dr Cullan Howlett** (University of Queensland) on receiving prestigious **2026 ARC Future Fellowships**.

The four-year fellowships support outstanding mid-career researchers to undertake high-quality research with national and international benefits. Together, the three projects will advance our understanding of the Universe, from improving gravitational-wave detection to exploring fast radio bursts and the nature of dark energy.

Daniel will develop new techniques that use pulsar scintillation to improve the detection of ultra-low-frequency gravitational waves. **Manisha** will investigate fast radio bursts as tools for studying galaxies and mapping matter across cosmic time. **Cullan** will use major international galaxy surveys to create an unprecedented dynamic map of the nearby Universe and investigate its accelerating expansion.

Congratulations to Daniel, Manisha and Cullan on this outstanding achievement!



READ MORE:

- [Future Fellowships announcement, ARC.](#)



FUNDING.OPPORTUNITIES

Please check out the following funding opportunities OzGrav has available to all members:

Travel and collaboration

ECR Travel Awards

- Supports OzGrav PhD students, postdocs and Associate Investigators to visit Partner Organisations/Investigators.
- Up to **AUD 4,500** for international travel or **AUD 2,800** for domestic
- At least 1/3 co-investment required
- Focus on research placements

International Visitor Funding

- For overseas researchers (including PIs) to collaborate on OzGrav projects in Australia.
- Minimum 2-week visit and ideally across at least 2 Nodes
- At least 1/3 co-investment required

Research & Innovation

Research Translation Seed Funding

- Supports early-stage projects applying OzGrav expertise beyond gravitational wave research.
- Led by OzGrav researchers and can include Partner Investigators as co-investigators
- Up to **AUD 30,000** available per project
- Start with a short EOI
- Designed to build translational or applied research pathways

Research & Innovation Grant

- For projects led by OzGrav PhD students or postdocs.
- Up to **AUD 5,500** for individual projects or **AUD 22,000** for cross-node teams
- Projects should aim to result in a publication

Professional development

Professional Development Grant

- Open to all OzGrav Postdocs and students.
- Main objective is to support participation in activities and training to improve professional development skills.
- Up to **AUD 1,700** and, under exceptional circumstances up to **AUD 5,000**

Additional Support

Vacation Scholarship Contribution

- For vacation scholarships up to 12 weeks per student for a suitable Project.

Carers Grant

Hardship Grant

**APPLY
NOW**



Testimonials from our members and collaborators: Matthew G. Baring



“Thanks are due to OzGrav for financial support to underpin this visit.”



With support from an OzGrav International Visit Grant, I spent 7.5 weeks in Australia during my sabbatical from Rice University in Houston, visiting OzGrav researchers at ANU, Monash University, the University of Melbourne and Swinburne University of Technology.

The main scientific goal of my visit was to develop a framework for modelling gravitational-wave signals that could accompany giant gamma-ray flares from magnetars, highly magnetised neutron stars. I wanted to explore what these signals might look like and, importantly, whether they could be detected with current gravitational-wave observatories.

My first week at ANU, hosted by **Robert Ward**, allowed me to work closely with LIGO instrumentalists and signal-analysis experts, including **Lilli Sun and Karl Wette**. Our discussions helped me better understand the practical challenges of detecting magnetar signals, including the effects of detector noise and sensitivity at different frequencies. I also joined my first weekly OzGrav meeting, which was a great introduction to the breadth of research happening across the Centre.

I then spent six and a half weeks in Melbourne, splitting my time between Monash, the University of Melbourne and Swinburne. At Monash, hosted by **Paul Lasky**, I joined weekly group meetings led by **Eric Thrane**, where I learned about new approaches to extracting weak gravitational-wave signals from noisy data. I also presented my magnetar work to the group and had valuable discussions with Paul and Eric about the challenges of detecting these signals. Their healthy scepticism helped sharpen my thinking about what might realistically be observable with current detectors. I also enjoyed working with postdoctoral researcher Sharan Banagiri, discussing both our research and career development.

At the University of Melbourne, I worked with my host **Andrew Melatos**, his students and postdoctoral researcher **Andres Vargas**. We explored estimates of the gravitational-wave power that could be produced by rapid mass ejections from a magnetar's surface. Our independent calculations produced encouraging results, providing motivation for more detailed modelling of the dynamics and radiative efficiency of these outflows. I particularly enjoyed interacting with the early-career researchers in the group and learning about their creative research.

At Swinburne, my main focus was continuing my collaboration with **ARC DECRA Fellow Marcus Lower**. We have been working together on several magnetar projects, and his expertise in radio pulsars and observational astronomy has been invaluable to our broader research efforts. During my visit, we identified several promising future directions and made substantial progress on two papers.

I also gave a seminar or colloquium at each of the four universities, sharing recent developments in magnetar observations, modelling and the potential for gravitational-wave emission. These talks provided a chance to connect with researchers across the OzGrav community, including many early-career scientists, and the questions and follow-up discussions were particularly rewarding.

Overall, I consider the visit an unqualified success. It established the foundations for a potentially productive collaborative research program on gravitational waves from magnetar giant flares, while also strengthening existing connections and creating new ones across the OzGrav community. There is still plenty of theoretical work to come, but I expect the collaborations developed during the visit will lead to further research and joint publications.



News and announcements

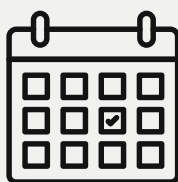


Have a project for an OzGrav ECR? Submit it for inclusion in our project list. HQ travel support may be available for an ECR to visit your Node and collaborate with your team. **Submit a project [here](#).**



- **Congratulations to Mia Babatsikos, Shanika Galaudage, and Mac Button** for winning the **Creative Communication Competition**
- Congratulations to **Dr Kirsten Banks** on making it to the **2026 Forbes 30 Under 30** Asia list and on being named a finalist in the **2026 Australian Museum Eureka Prizes**.
- Congratulations to **Dr Fiona Panther** for being named **Young Tall Poppy for Western Australia**
- Congratulations to **Dr Iris de Ruiter**, who has been awarded a prestigious **2026 Gruber Foundation Fellowship**.
- Congratulations to **Carl Knox and Kovi Rose** for making it to the cover of **Nature Astronomy** for the August 2026 issue.
- Congrats to OzGrav's AI **Dr Anais Moller** on receiving the **Anne Green Prize for Outstanding Research** by an MCR for her expertise in cosmology and time-domain astronomy.
- OzGrav alum **Dr Ziteng (Andy) Wang** received the **Louise Webster Prize** for the paper: Detection of X-ray emission from a bright long-period radio transient, *Nature* 642, 583-586 (2025)

Events



- **OzGrav Relativistic Afterglows Workshop 2026**, 16-18 September 2026, Swinburne University of Technology
- **LIGO-Virgo-KAGRA Collaboration Meeting**, 21-25 September 2026, Pune, India
- **OzGrav KP5 Cosmology workshop**: 7-9 October 2026 in Melbourne
- **NZ Gravity Workshop**, 5-6 November 2026 in Auckland
- **Ripples Through Time: Past Triumphs, Mapping the Future**: 25-27 November 2026, UWA, Perth.
- **OzGrav ECR workshop**: 30 Nov - 1 Dec 2026, Sydney, <https://www.ozgrav.org/2026-ozgrav-ecr-workshop-annual-retreat/>
- **OzGrav Retreat**: 2 - 4 Dec 2026, Sydney. <https://www.ozgrav.org/2026-ozgrav-ecr-workshop-annual-retreat/>
- **The Impact of Binaries on Stellar Evolution (IMBASE27)**, July 12 - 16 2027, Tenerife, Canary Islands, Spain <https://meetings.iac.es/ibase2027/>

Image Credits

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Artwork: Carl Knox, OzGrav, Swinburne University of Technology. Astrophotography: Blake Estes and Christian Sasse, iTelescope

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Group photo in Kanazawa, Japan, credit: OzGrav. Background stamp image, credit: AI-generated.

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Background picture “Web of black hole populations”, Credit: Carl Knox, OzGrav, Swinburne University of Technology.

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Background picture “Black hole horizon ripples”, Credit: Carl Knox, OzGrav, Swinburne University of Technology.

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About OzGrav



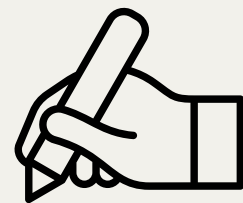
The ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) is funded by the Australian Government through the Australian Research Council Centres of Excellence funding scheme. OzGrav is a partnership between Swinburne University of Technology (host of OzGrav headquarters), the Australian National University, Monash University, Adelaide University, University of Melbourne, University of Sydney, University of Queensland and University of Western Australia, along with other collaborating organisations in Australia and overseas.

The mission of the ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) is to capitalise on the historic first detections of gravitational waves to understand the extreme physics of black holes and warped spacetime, and to inspire the next generation of Australian scientists and engineers through this new window on the Universe. The Centre brings together the Australian pulsar and gravitational-wave communities in a focused national program. Through this centre, Australian scientists and students have the opportunity to fully participate in gravitational-wave astronomy on the international stage.

For more information, visit: <https://www.ozgrav.org/>

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