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GIRLS IN PHYSICS BREAKFAST 2026

The Curious Case of Fast Radio Bursts

Dr. Manisha Caleb
Senior Lecturer in Astrophysics,
Sydney Institute for Astronomy, School of Physics
The University of Sydney

FOR STUDENTS IN YEARS 10, 11 & 12 INTERESTED IN A CAREER IN STEM

Meet like-minded students and women who have a career in Physics and Engineering. Ask questions and explore different pathways that might work for you!

SCAN FOR MORE INFO

Thursday May 21, 2026
Breakfast 8.30am to 11.00am
The Cube, Wodonga

$15 per student
(Max. 12 Students per school)

"I was talking to a guest at my table and her career sounded so amazing. Then I realised that in eight years that could be me. I got so excited!" - Year 10 Student

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Speaker Bio: Dr Manisha Caleb is a radio astronomer who studies some of the most mysterious signals in the Universe. She holds a Masters degree in spacecraft technology and satellite communications from University College London and a PhD in astronomy and astrophysics from the Australian National University. Her research focuses on radio transients — objects that "go bang" in the sky and are sometimes never to be seen again. These signals typically involve some of the most energetic processes in the Universe and are crucial for understanding the nature of matter and gravity. Her work helps reveal otherwise invisible matter, magnetic fields, and structure in the cosmos, using some of the world's best radio telescopes in Australia and around the world.

Dr Caleb is passionate about science outreach and mentoring, and loves sharing the thrill of scientific discovery, describing herself as a cosmic detective solving one mystery at a time.

Abstract: Everyone loves a good mystery, and in astronomy, there's nothing more exciting than a signal we can't explain. Throughout astronomical history, when something goes boom in the sky, it often points to a completely new phenomenon. About twenty years ago, astronomers discovered mysterious flashes of radio waves appearing all over the sky. These flashes were so strange that they quickly became their own cosmic category: fast radio bursts (FRBs).

FRBs are brief — they last 100 times shorter than the blink of an eye — but in that instant, they release as much energy as the Sun does in an entire day! Even more puzzling, we don't know exactly when they'll happen, where they'll appear, or what causes them. What we do know is that about three of these bursts happen every single minute, scattered randomly across the sky.

The most exciting thing about FRBs is that they're like cosmic postcards from halfway across the Universe. As they travel, they carry information about everything in their path — magnetic fields, turbulence, and invisible matter — illuminating the Universe in a way no other signal can. My research is all about solving this cosmic mystery: finding out where FRBs come from, what produces them, and how we can use them to understand the Universe in brand-new ways. I'll share the story of these cosmic enigmas, including my most recent discovery of an FRB that takes us back to when the Universe was just 3 billion years old.

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