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COLLOQUIUM

A virtual tour of Einstein's Universe

Prof Matthew Bailes (Swinburne University of Technology,
Australia)

DATE: Wednesday, 7 August 2024 | 17h00–18h00 SAST

VENUES:

- Neelsie Cinema, Stellenbosch University
- Online

ABSTRACT

Einstein developed his General Theory of Relativity when it had little practical application over 100 years ago. Relativity predicts unintuitive behaviours such as length contraction, time dilation and the bending of space and time in the presence of matter, as well as the existence of black holes. Black holes were once thought to be a theoretical conjecture with little or no connection to reality. Today astronomers are routinely detecting black hole collisions and witnessing Einstein's laws in action. In this public talk I will use the latest tools in astronomy education to take the audience on a virtual tour of Einstein's Universe and demonstrate how South Africa's MeerKAT telescope is testing Einstein's theories of gravity.

BIOGRAPHY

Prof Matthew Bailes is an expert in the discovery of pulsars and fast radio bursts and currently leads the MeerTime Key Science Project on South Africa's remarkable MeerKAT radio telescope.

Prof Bailes was awarded his PhD at the Australian National University and completed postdoctoral work at NASA, the University of Manchester in the UK, Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the University of Melbourne in Australia before founding the Swinburne University of Technology's Centre for Astrophysics and Supercomputing.

He is known for his many discoveries of millisecond pulsars, and their use in tests of Einstein's General Theory of Relativity. In 2007 he was part of the team that discovered the first Fast Radio Burst (FRB) and was awarded the Shaw Prize in 2023 in recognition of that.

Prof Bailes has a passion for public outreach and has developed some remarkable virtual reality tools for demonstrating the remarkable phenomena that take place in our Universe that he uses to give exciting public lectures around the world.



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