

Australia's Proud Astronomy Heritage

In 1609, Galileo first turned his telescope towards the sky and the rest, as they say, is history. To celebrate the 400th anniversary of this momentous event, which revolutionised our view of the Universe and our place in it, 2009 is the International Year of Astronomy.

Australia has a long and proud history in astronomy, with major breakthroughs from our optical and radio views of the sky, and it is still recognised as a world-leader in astronomical research today.

In this edition of *Australasian Science*, however, the focus is not the past but our present day accomplishments and future endeavours.

From our nearby universe, Prof Tim Bedding of the University of Sydney tells how listening to the wobbles of stars allows us to see their very innards (p.26), while Prof Bryan Gaensler of the University of Sydney tells us about the importance of extensive magnetic fields in shaping galaxies (p.22).

On larger scales, A/Prof Andrew Hopkins of the University of Sydney takes us through the life of galaxies, from initial seed to majestic spiral (p.19), while A/Prof Stuart Wyithe of the University of Melbourne shows us how we are on

the verge of seeing the very birth of the first galaxies (p.15).

Governing it all, Prof Brian Schmidt of the Australian National University's Mt Stromlo Observatory enlightens us on the influence of dark energy – the mysterious material that pervades our Universe and is driving its expansion (p.12).

Over the next decade we expect a revolution in astronomy with the development of new technology to survey the heavens, each facing hurdles in engineering and computing. Prof Lister Staveley-Smith of the University of Western Australia tells us about the Square Kilometre Array, the world's largest radio telescope which will hopefully be built in Western Australia (p.38), while Prof John Storey of the University of NSW reveals the benefits and difficulties of building telescopes in one of the harshest climates on Earth, Antarctica (p.34).

On the other hand, Dr Chris Fluke of Swinburne University of Technology shows us how to build and run a universe within a computer, one of the fastest growing areas of astronomical research (p.30).

Unfortunately, this edition of

Australasian Science can only represent a snapshot of Australia's involvement and impact in the astronomical sciences, and we could have filled several editions with equally important and thrilling stories of the next generation of massive optical telescope, the violent lives of supermassive black holes, the highest energy objects in the Universe and the cannibalisation of galaxies.

While space is short here in this edition, we hope you will take the opportunity during the International Year of Astronomy to find out more about these fascinating and spectacular aspects of the Universe, and understand the leading role that Australia is taking in international astronomy.

This year *Australasian Science* plans to profile these achievements with a series of feature articles by Australian astronomers as well as the introduction of monthly star charts and guides to help you navigate the night skies (p.42–43).

Happy viewing!

This month's Guest Editor of *Australasian Science*, Geraint Lewis, is Professor of Astrophysics at the University of Sydney. He undertakes a broad spectrum of research, from the influence of dark energy and dark matter on the evolution and ultimate fate of the Universe to exploring the hearts of quasars, the most luminous objects in the Universe. Closer to home, his research focuses upon galactic cannibalism, where small dwarf galaxies are torn apart by the much more massive Milky Way and Andromeda Galaxy. He has also mapped the tell-tale signs of tidal disruption and destruction, providing important clues to how large galaxies have grown over time.

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