OUTBACK OUTLOOK NEW AUSSIE MEGASCOPE SEEKS ALIENS & BIRTH OF UNIVERSE

COSMOS

THE SCIENCE OF EVERYTHING

ISSUE 98

COSMOS THE SCIENCE OF EVERYTHING

BEYOND THE PALAEO

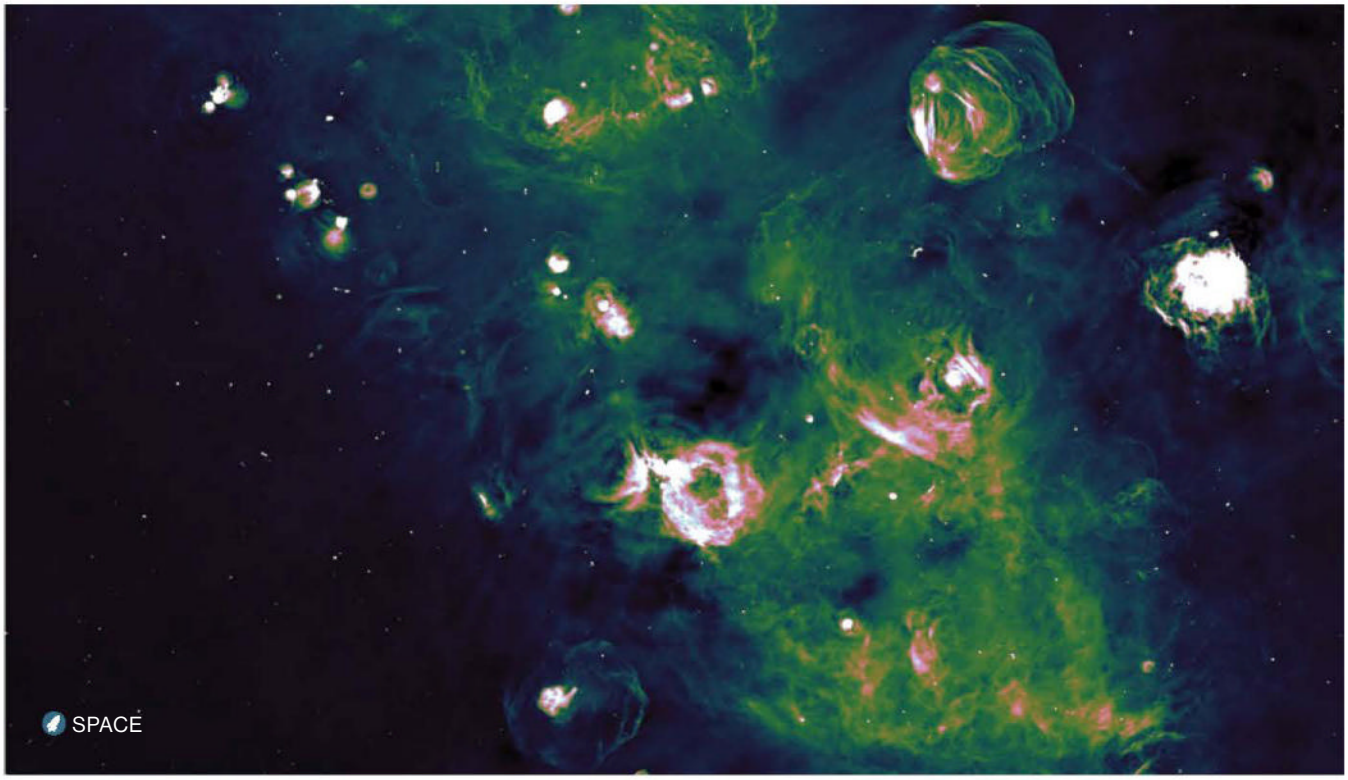
DULL DINOSAURS GET THE MAKEOVER THEY DESERVE

Afterlife A.I.
Tech gives a voice to the dearly departed

Seeing emotions
What if we could watch each other's raw feelings?

Ri Aus
THE ROYAL INSTITUTION OF AUSTRALIA
98
9 771832 522008
AU $15.00 NZ $16.00

DUMPING DIESEL FOR MICROGRIDS • THE SCIENCE AND ART OF AIR • COOL BANANAS



Australian telescopes' image provides glut of rare supernova remnants

We see so few – but so many stars have lived and died.

A COMBINED IMAGE from the Parkes radio telescope and the Australian Square Kilometre Array Pathfinder (ASKAP) has given scientists the most detailed radio image yet of our galaxy.

The image highlights hydrogen gas– likely from supernova remnants (SNRs) or new stellar nurseries, and the team is hoping it will shed much more information on why SNRs seem to be so rare.

The researchers believe this new image shows 20 possible SNRs, a huge boost to the number already known.

SNRs are giant clouds of dust and gas created from a supernova. The resulting nebula are beautiful, and relatively short lived – a few tens of thousands of years.

But models predict that, due to the age and density of the Milky Way, we should see the remnants of many, many stars that have lived and died. Instead, we only know of 30 or so in the Milky Way, the Large and Small Magellanic Clouds and Andromeda Galaxy.

"It's not totally clear why SNRs are hard to find," says Macquarie University astronomer Professor Andrew Hopkins.

"Some of it is just a sensitivity issue and needing more sensitive observations to pick up the faintest things. But another part is that they not only become fainter but also larger as they age, which makes them very dim and diffuse."

Hopkins is the lead scientist on ASKAP's Evolutionary Map of the Universe (EMU) project, which published details on a pilot survey in 2021. A paper on this new image and any SNR candidates has not yet been finalised.

▲ Combined images from the ASKAP and Parkes radio telescopes.

The researchers used the Parkes and ASKAP telescopes because of their differing resolutions. With a 64-metre dish, Parkes is one of the largest single dish radio telescopes in the world. However, ASKAP is an interferometer telescope, which uses multiple telescopes placed very far apart to mimic a single telescope with a six-kilometre-wide dish.

"However, since even with 36 dishes we can't sample all the light falling on that 6km aperture, the ASKAP image is not sensitive to the large-scale radio emission that Parkes does detect," Hopkins says.

"Combining the information ... gives us the best of both worlds – ASKAP's fine resolution together with the large-scale emission from Parkes, each filling in the gaps of the other, to give us the best fidelity image of our Milky Way Galaxy."

R. KOTHES (NRC) AND THE PEGASUS TEAM