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SPACE

# RADIO TELESCOPES CAPTURE THE REMNANTS OF DEAD STARS HIDDEN THROUGHOUT THE MILKY WAY

This image was produced as part of a project that aims to produce a near-complete map of the Galaxy

**T**he bright, bubbly blobs seen in this image are supernova remnants – clouds of hot gas and debris that are left behind after the dramatic explosion that occurs at the end of a star's life. Theoretical models predict that there should be far more of them scattered throughout the Milky Way than astronomers have so far been able to observe.

However, this new image, produced using data collected by the Australian Square Kilometre Array Pathfinder (ASKAP) and Parkes Observatory's radio telescopes, also in Australia, has uncovered more than a dozen supernova remnants that were previously unknown. This suggests there are many more hiding in plain sight elsewhere in the Galaxy.

The image was produced as part of a collaboration between the Australia National Science Agency's Evolutionary Map of the Universe (EMU) project and the PEGASUS radio telescope survey, which is led by Italy's National Institute for Astrophysics.

"This new picture showcases a region of the Milky Way, only visible to radio telescopes, where we can see extended emission associated with hydrogen gas filling the space between dying stars, related to the birth of new stars, and hot bubbles of gas called supernova remnants," said Prof Andrew Hopkins, lead scientist of the EMU project. "Over 20 new possible supernova remnants have been discovered as a result of combining these images, where only seven were previously known."

The researchers were able to map a region covering roughly 1 per cent of the galactic plane of the Milky Way. But this is just the start.

"The eventual results will be an unprecedented view of almost the entire Milky Way, about 100 times larger than this initial image, but achieving the same level of detail and sensitivity," said Hopkins.

"It is estimated that there may be about 1,500 more supernova remnants in the Galaxy that astronomers haven't discovered yet. Finding the missing remnants will help us unlock more of an understanding of our Galaxy and its history."

ROLAND KOTHES/NRC/PEGASUS TEAM



