



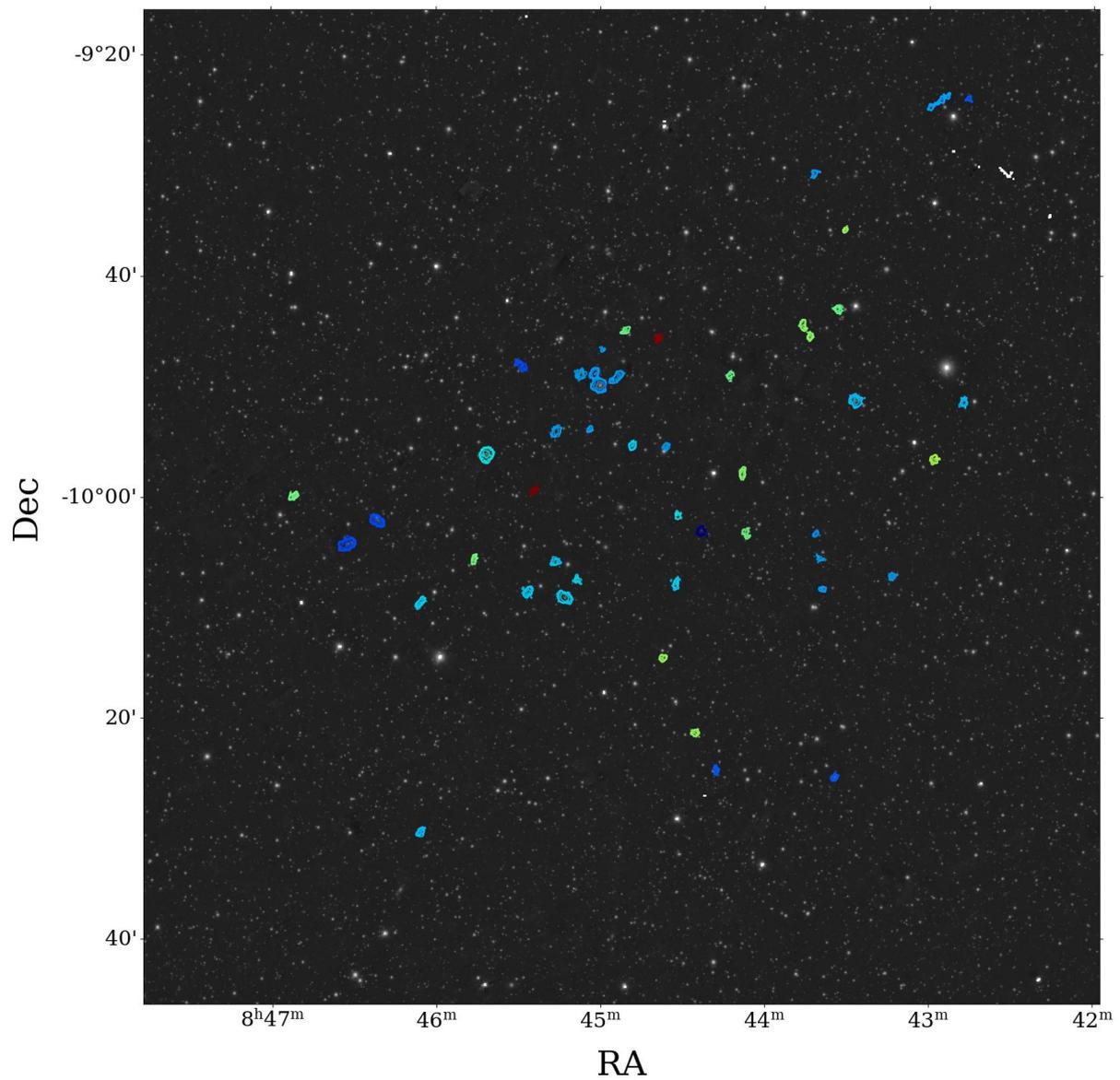
Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemerkingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
Welgelegen House, Chapel Road Extension, Rosebank, Cape Town
Tel: +27 (0) 21 650 5427/5428/5674 Fax: +27 (0) 21 650 5628

www.uct.ac.za

2 April 2024

MeerKAT radio telescope discovers 49 new galaxies in just two hours



The 49ers - the 49 new gas-rich galaxies detected by the MeerKAT radio telescope in South Africa. Each detection is shown as coloured contours, with redder colours indicating more distant gas from us, and bluer colours as closer gas. The background image comes from the optical PanSTARRS survey. Glowacki et al. 2024

The MeerKAT radio telescope in South Africa has once again revealed its capabilities, enabling the discovery of 49 new gas-rich galaxies. From an observation barely over two hours long, this discovery, also made possible by the services provided by the [Inter-University Institute for Data-Intensive Astronomy \(IDIA\)](#), was far from expectations, when the original intent was to study just one galaxy. The research was published overnight in [Monthly Notices of Royal Astronomical Society](#).

An international team of astronomers, led by Dr Marcin Glowacki from the Curtin University node of the International Centre for Radio Astronomy Research (ICRAR) in Western Australia, aimed to study a single radio galaxy. These galaxies emit radio waves due to superheated material swirling around the supermassive black hole at their centre. The team's objective was to investigate the star-forming gas in this galaxy using the new MeerKAT radio telescope, which is the most sensitive of its kind for these studies. Although they didn't find any star-forming gas in the galaxy they were studying, Glowacki discovered other galaxies while inspecting the data.

The MeerKAT data were analysed using the [ilifu cloud computing system](#) developed and managed by IDIA at the University of Cape Town (UCT). A powerful system that was designed to support astronomers conducting MeerKAT science. Moreover, [CARTA](#) and [iDaVIE-v](#), software also developed by IDIA at UCT, were also used to visualise the data and ultimately reveal these new galaxies.

Professor Patrick Woudt, interim director of IDIA, commented: "We are always very happy to see how our computer facility is providing the best environment to make discoveries such this one and in a record time scale from data gathering to analysis."

Dr Lucia Marchetti, director of the [IDIA visualisation lab](#) at UCT where iDaVIE is developed, added: "This discovery also shows the value of our innovative work in data visualisation that is providing a unique and unprecedented immersive view on the data capable of revealing the unexpected."

In total, the gas of 49 galaxies was detected, with each finding brand new. Glowacki said this was a great example of how fantastic an instrument MeerKAT is for finding the star-forming gas in galaxies.

"I did not expect to find almost 50 new galaxies in such a short amount of time," he said. "By implementing different techniques in finding galaxies which is used for other MeerKAT surveys such as LADUMA (Looking At the Distant Universe with the MeerKAT Array), we were able to detect all of these galaxies and reveal their gas content that MeerKAT is so good at seeing."

The new galaxies have been informally nicknamed the 49ers - a reference to the 1849 California gold rush miners. Glowacki views the 49 new galaxies as valuable as gold nuggets in our night sky. Many of the galaxies are near each other, forming galaxy groups, with several identified in the one observation. Three galaxies, in particular, are directly connected to each other by their gas.

Glowacki said: "These three are particularly interesting, as by studying the galaxies at other wavelengths of light, we discovered the central one is forming a lot of stars. It is likely stealing the gas from its companion galaxies to fuel its star formation, which may lead the other two to become inactive."

Professor Ed Elson from the University of the Western Cape, and a co-author of the paper, said: "This discovery highlights the raw power of the MeerKAT telescope as an imaging instrument. The methods we developed and implemented to study the 49ers will be useful for MeerKAT large science surveys, as well as smaller observing campaigns such as ours."

This finding is no accident by MeerKAT either. Recently, an ICRAR summer student, Jasmine White, working with Glowacki helped find even more gas-rich galaxies in other short observations made by MeerKAT.

"We hope to continue our studies and share even more discoveries of new gas-rich galaxies with the wider community soon," Glowacki concluded.

ENDS

Issued by: UCT Communication and Marketing Department

Ridovhona Mbulaheni

Media Liaison and Monitoring Officer
Communication and Marketing Department
University of Cape Town
Rondebosch
Tel: (021) 650 2333
Cell: (064) 905 3807
Email: ridovhona.mbulaheni@uct.ac.za
Website: www.uct.ac.za