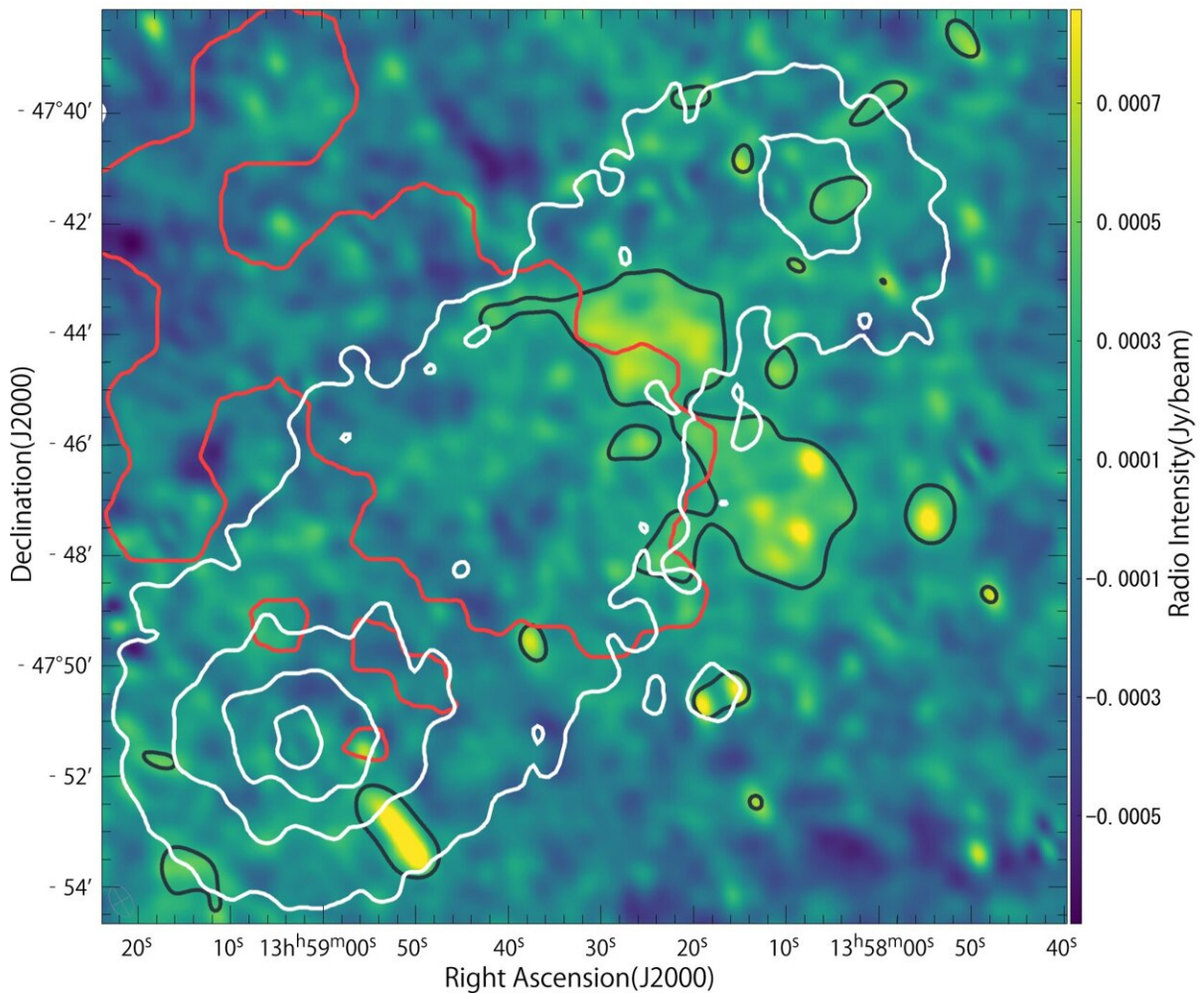


Astronomers unbury radio emissions from CIZA galaxy cluster

June 15 2023



uGMRT radio intensity distribution map of CIZA1359. The black lines highlight spatially resolved extended sources. Other lines show the x-ray distributions

observed by the Suzaku satellite (white lines), and XMM-Newton satellite (red lines). Credit: Kohei Kurahara

Astronomers have used a newly upgraded world-leading radio telescope to unbury the radio emissions from a galaxy cluster known as CIZA1359. The signal has until now been buried in noise from a nearby foreground object.

When astronomers study the [radio waves](#) from distant [galaxy clusters](#), emissions from foreground objects can bury the faint signals of the distant galaxies. CIZA1359 had been identified by the Clusters in the Zone of Avoidance (CIZA) survey mission as one of the few known galaxy clusters where we can see two sub-clusters in the early stages of the merging. But due to its [close proximity](#) to a bright foreground object, no one had ever succeeded in detecting its diffuse radio structure.

Kohei Kurahara at the National Astronomical Observatory of Japan led a team to look for radio waves from CIZA1359 using the upgraded Giant Metrewave Radio Telescope (uGMRT), which offers imaging with exceptional accuracy and an unprecedented range of spatial scale. They succeeded in detecting the diffuse radio structure toward CIZA1359 and identified many radio sources within the cluster.

These results will help in planning observations with next-generation radio interferometers, such as the Square Kilometer Array (SKA). Such facilities will be able to search for more distant and fainter objects, with the potential to unravel intricate details concerning the evolution of galaxy clusters.

These results, "Diffuse radio source candidate in CIZA J1358.9-4750," were published in the special issue of the *Publications of the*

Astronomical Society of Japan, of which the printed version was published in February 2023.

More information: Kohei Kurahara et al, Diffuse radio source candidate in CIZA J1358.9–4750, *Publications of the Astronomical Society of Japan* (2022). [DOI: 10.1093/pasj/psac098](https://doi.org/10.1093/pasj/psac098)

Provided by National Institutes of Natural Sciences

Citation: Astronomers unbury radio emissions from CIZA galaxy cluster (2023, June 15)
retrieved 29 April 2024 from
<https://phys.org/news/2023-06-astronomers-unbury-radio-emissions-ciza.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.