



# Radio continuum observations of new radio halos and relics from the NVSS and WENSS surveys

R. J. van Weeren, M. Bruggen, H. J. A. Rottgering, M. Hoeft, S. E. Nuza, H. T. Intema

(Submitted on 27 Jul 2011)

Radio halos and relics are diffuse radio sources found in galaxy clusters showing significant substructure at X-ray wavelengths. These sources provide important information about non-thermal processes taking place in the ICM. Until now only a few dozen relics and halos are known, while models predict that a much larger number of these sources exist. In this paper we present the results of an extensive observing campaign to search for new diffuse radio sources in galaxy clusters. We discovered 6 new radio relics, including a probable double relic system, and 2 radio halos. In addition, we confirm the presence of diffuse radio emission in four galaxy clusters. By constructing a sample of 35 radio relics we find that relics are mostly found along the major axis of the X-ray emission from the ICM, while their orientation is perpendicular to this axis. This is consistent with the scenario that relics trace merger shock waves. The major and minor axis ratio distribution of the ICM for clusters with relics is also broader than that of the NORAS-REFLEX sample. We compared the X-ray luminosity and redshift distributions of clusters with relics to an X-ray selected sample from the NORAS and REFLEX surveys. We find tentative evidence for an increase of the cluster's relic fraction with X-ray luminosity and redshift. [abridged]

Comments: 20 pages, 26 figures, accepted for publication in A&A on July 14, 2011

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**

Cite as: [arXiv:1107.5597](#) [astro-ph.CO]

(or [arXiv:1107.5597v1](#) [astro-ph.CO] for this version)

## Submission history

From: Reinout van Weeren [[view email](#)]

[v1] Wed, 27 Jul 2011 21:27:01 GMT (3925kb,D)

[Which authors of this paper are endorsers?](#)

## Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

astro-ph.CO

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

## References & Citations

- [INSPIRE HEP](#)  
([refers to](#) | [cited by](#))
- [NASA ADS](#)

## Bookmark([what is this?](#))



