



Relics as probes of galaxy cluster mergers

R. J. van Weeren, M. Bruggen, H. J. A. Rottgering, M. Hoeft

(Submitted on 20 Jul 2011)

Galaxy clusters grow by mergers with other clusters and galaxy groups. These mergers create shocks within the intracluster medium (ICM). It is proposed that within the shocks particles can be accelerated to extreme energies. In the presence of a magnetic field these particles should then form large regions emitting synchrotron radiation, creating so-called radio relics. An example of a cluster with relics is CIZA J2242.8+5301. Here we present hydrodynamical simulations of idealized binary cluster collisions with the aim of constraining the merger scenario for this cluster. We conclude that by using the location, size and width of double radio relics we can set constraints on the mass ratios, impact parameters, timescales, and viewing geometries of binary cluster merger events.

Comments: Accepted for publication in special issue of Journal of Astrophysics and Astronomy: conference proceedings of "Diffuse Relativistic Plasmas" conference, Bangalore, 1-4 March 2011, 4 pages, 2 figures

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

Cite as: [arXiv:1107.4119](https://arxiv.org/abs/1107.4119) [astro-ph.CO]

(or [arXiv:1107.4119v1](https://arxiv.org/abs/1107.4119v1) [astro-ph.CO] for this version)

Submission history

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

[v1] Wed, 20 Jul 2011 20:44:21 GMT (1540kb)

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

Download:

- [PDF](#)
- [PostScript](#)
- [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?](#))

