

# MAGNETIC FIELDS OF RADIO GALAXIES IN ABELL CLUSTERS 115 AND 568

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## 1 Abell 115

Abell 115 is an intermediate-redshift cluster ( $z=0.1971$ ) well studied at different wavelengths (see Giovannini et al., 1987 and references therein).

A Narrow Angle Tail radio galaxy is located at about 480 kpc ( $H_0=100 \text{ km s}^{-1} \text{ Mpc}^{-1}$  throughout this paper) from the center of the cluster. The radio source is associated with a cluster member whose deprojected velocity, with respect to the mean cluster velocity, is about  $2400 \text{ km s}^{-1}$ .

The radio characteristics of the NAT radio source are: a core coincident with the optical galaxy, an asymmetric jet with a bending at 6 kpc from the nucleus, a tail structure resolved in two streams of emission, and a low brightness feature which bends at 60 kpc in direction opposite to the X-ray emission centered on 3C 28. The core, the jet and the counterjet are not polarized. The southern knot is more polarized than the northern one (11% against 9% at 1.5 GHz, 22% against 17% at 4.9 GHz), and the magnetic field becomes circumferential towards the knot edges.

We have computed the equipartition magnetic field for various components of the source (Figure 1). A detailed discussion of this source is given in Gregorini and Bondi (1989).

## 2 Abell 568

Abell 568 is a closer cluster ( $z=0.0751$ ) characterized by a small group of galaxies located in its center within a linear distance of about 65 kpc. Analysis of the radio data is in progress; only preliminary results are given.

The peculiar radio emission of this group consists of two radio galaxies (Figure 2). The western radio source is associated with the brightest member of the small group ( $z=0.0790$ ). The eastern radio galaxy is a Wide Angle Tail with an opening angle of about  $90^\circ$  and is associated with a galaxy ( $z=0.0737$ ) which shows an elongated symmetric feature at the same position angle of the radio jets.

The two radio galaxies belong to Fanaroff and Riley Class I and both show two symmetric jets. The jets in the eastern radio source are polarized with magnetic field perpendicular to the axis (neglecting Faraday rotation effects); the field

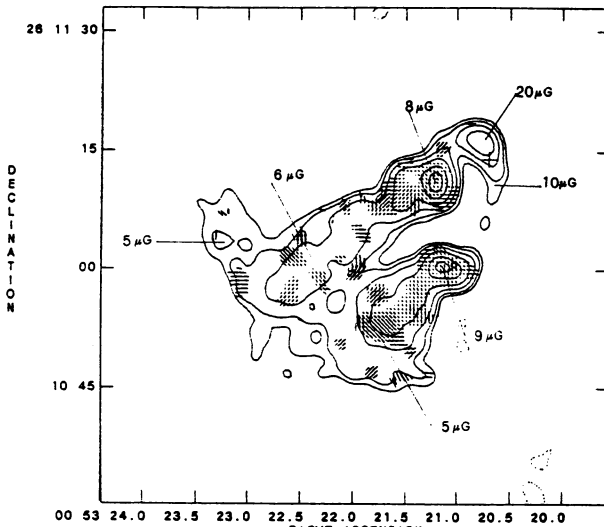
becomes tangential on the edges of the radio source. In the western radio source only the tails are polarized. Computed values of equipartition magnetic field are superimposed in figure 2.

The distorted radio morphology and the physical proximity of galaxies suggest that we may be witnessing the merging of two or more galaxies in the cluster center.

### References

Giovannini, G., Feretti, L., Gregorini, L. (1987) *Astron. Astrophys. Suppl. Ser.* 69, 171

Gregorini, L., Bondi, M. (1989) *Astron. Astrophys.*, in press



*Fig. 1 (left):* A 115 VLA map at 1.5 GHz (FWHM beam of  $2''.5 \times 2''.5$ )

*Fig. 2 (below):* A 568 VLA map at 4.9 GHz (FWHM beam of  $2''.1 \times 1''.4$  ( $64^\circ$ ))

In both maps E vectors are proportional to fractional polarization

