FARADAY EFFECTS DUE TO GASEOUS HALOS IN COMPACT STEEP-SPECTRUM RADIO SOURCES

Everton Lüdke[1] and Agner Bellincanta[2]

In this paper we analyze single-dish and interferometer polarization data at several frequencies to investigate the strong Faraday effects seen in Compact steep-spectrum (CSS) radio sources. The depolarization which is an indicator of the degree of heterogeneity in the distribution function of Faraday depths in the medium which depolarizes the radio waves correlates well with redshift and projected distance from the polarized source component from the core, in the sense that compact sources at high redshifts present the strongest Faraday effects.

The data confirms that these sources are certainly embedded in dense gaseous halos with typical Faraday dispersion values much greater than those seen in more extended radiogalaxies and quasares with double structure and a visible jet.

We also found evidence that on the whole, luminous compact quasars with exceedingly strong depolarization are common among the CSSs, although negligible depolarization is seen in some cases.

[1]UFSM/LACESM-Centro de Tecnologia, Brazil

[2]UFSM/CCNE-Departamento de Física, Brazil

RECENT ADVANCES ON THE ORIGIN OF THE LAING-GARRINGTON EFFECT

Everton Lüdke[1]

Intermediate-redshift radio galaxies and quasars show striking depolarization and Faraday rotation asymmetry ('The Laing-Garrington Effect') which are apparently related with the observed property of spectral index asymmetry. It has been widely suggested that these effects can be explained by several arguments from differential Faraday effects due to a symmetric magnetoionic environment to light-travel aberration due to source large sizes.

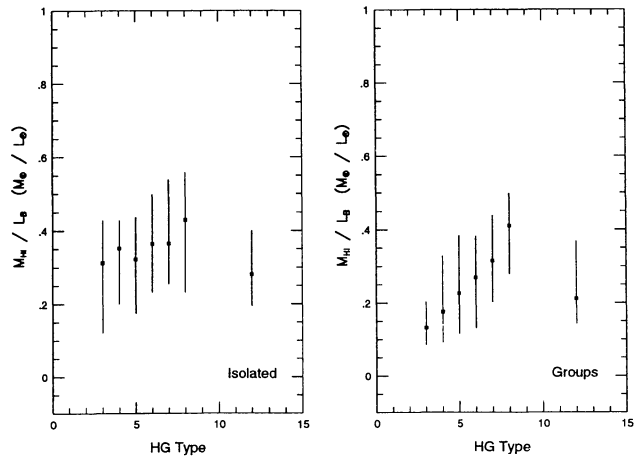
In this paper I discuss observational results from radio interferometric observations with the Multi-Element Radio-Linked Interferometer Network (MERLIN) and the Very Large Array (VLA) which can discern between the theoretical hypothesis. The data suggests that external depolarization is likely to be the origin of the Laing-Garrington effect in compact and extended radio sources.

[1]UFSM/LACESM-Centro de Tecnologia, Brazil

HI CONTENT IN LOOSE GROUPS OF GALAXIES

Marcio A.G. Maia[1]

The HI content is an important tool in the determination of the total mass of galaxies, as well as a diagnostic of possible environmental effects over their physical properties. Tidal effects, collisions and ram pressure can produce gas removal, resulting in the phenomenon of *anemic galaxies*. We investigate this effect in galaxies belonging to loose groups. Our sample contains 2361 galaxies with $m_Z \leq 15.7$ in the range $+9^o \leq \delta \leq +15^o$ and $8^h \leq \alpha \leq 18^h$. The 21-cm observations were carried out at Arecibo Observatory (spirals) and for early-types the redshifts were obtained at CASLEO (Argentina) and LNA (Brazil). By using the group finding algorithm of Huchra & Geller (1982), a total of 78 groups with 4 or more galaxies were found with a density contrast $\delta\rho/\rho \geq 80$. Spiral galaxies in groups with Vr $<$ 12 000 km/s and $-21 \leq M_Z \leq -17$ formed a sample called "group", while the control sample contained isolated galaxies ("isolated"). We used as diagnostic of the HI content the HI mass-to-light ratio M_{HI}/L_B, where M_{HI} is the neutral hydrogen mass for each Haynes & Giovanelli (1984) morphological type definition (Sa = 3, Sab = 4, Sb = 5 ... Scd = 8 and S...= 12). The presence of anemic galaxies in groups can be seen in the figure below. This effect, already found in rich clusters, is present in lower density regimes such as that of loose groups, in a similar way to the morphology-density effect.



[1]Departamento de Astronomia, Observatório Nacional, Rio de Janeiro, Brazil