

A STUDY OF ONE-SIDED RADIO QUASARS

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Although most powerful extended radio quasars have lobes of radio emission on opposite sides of the nuclear component, a significant number appear to have extended emission on only one side. We have observed ~40 such sources (mostly from the compilation of Kapahi 1981) with the VLA, to confirm their classification and study their properties.

The new observations show that many of these sources do not really belong to the one-sided class. In most of these, a component was detected on the other side which was missed earlier either due to its very small separation from the core (e.g., 1509+158, fig.1a), or due to its low surface brightness (e.g., 1012+232, fig.1b).

We find that one-sided sources tend to have more dominant cores and smaller linear sizes. The median value of the fraction of emission from the core at an emitted frequency of 8 GHz, f_c , is ~0.7 for 21 quasars (redshifts known, $S(178 \text{ MHz}) \geq 2\text{Jy}$). The median linear size, l , for this sample is ~25 kpc. In comparison, for 131 double-lobed quasars ($S(178) \geq 2\text{Jy}$), the median values of f_c and l are ~0.15 and ~200kpc respectively. The one-sided quasars mapped by Perley (1982) selected at high frequencies have a median of ~0.95. These values are consistent with the possibility that one-sided sources are inclined at small angles to the line of sight (Kapahi 1981).

Two-sided sources tend to have their core polarization E-vector ($\lambda 6 \text{ cm}$) normal to the source orientation, with no such trend for one-sided sources, supporting the above interpretation (Saikia & Shastri 1984).

Although most one-sided sources are core-dominant, a few have weak cores, i.e., $f_c \leq 0.1$ e.g., 1729+501, fig.2). Perhaps in these sources we are witnessing the "first flip before the flop" (Rudnick & Edgar 1984).

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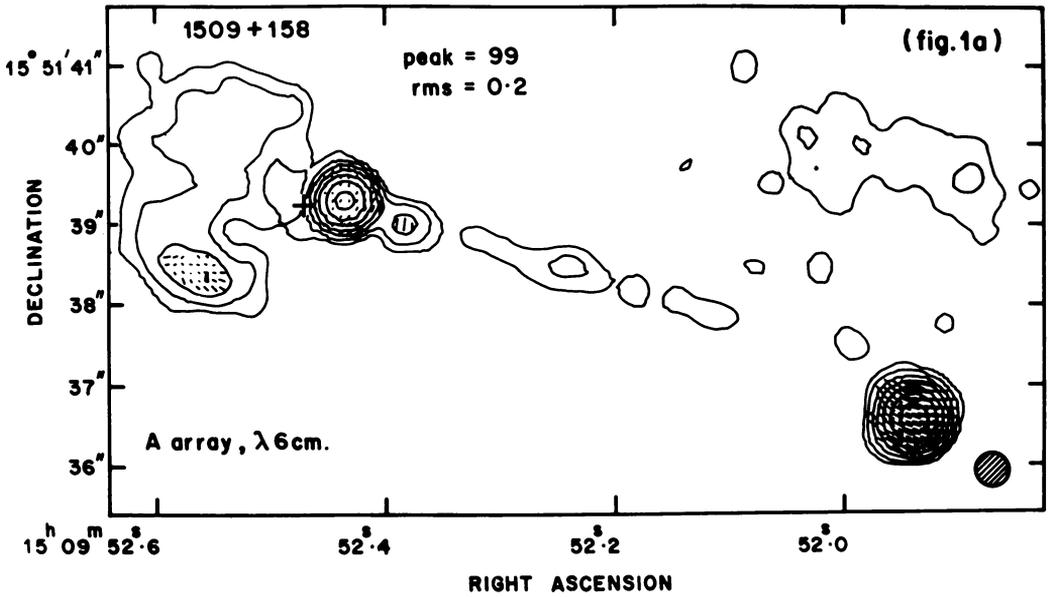


Fig. 1 a,b The radio maps with fractional linear polarization superposed. The surface brightness peak, rms and contour levels are in mJy/beam. Contours : a) -1, 1, 2, 4, 8, 16, 32, 64. b) -4, 4, 8, 16, 32, 64, 128, 256, 512.

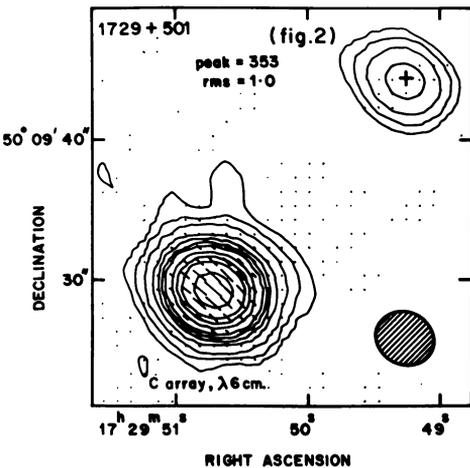
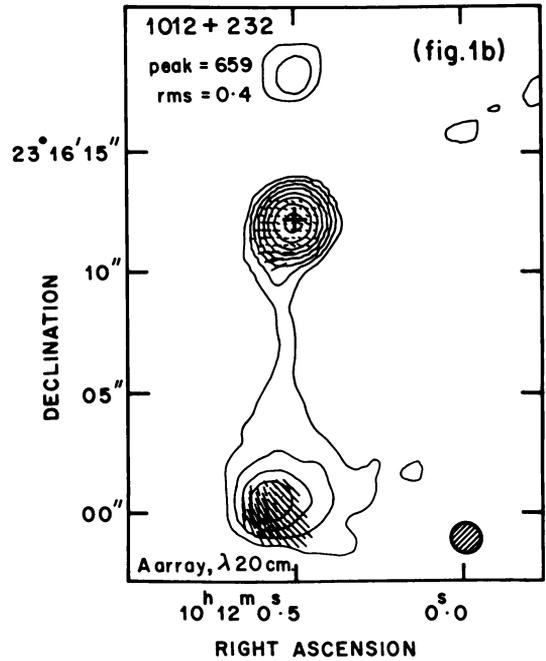


Fig. 2 The radio map with linear polarization intensity superposed. Contours : 353x(-0.01, 0.01, 0.02, 0.04, 0.08, 0.12, 0.16, 0.2, 0.3, 0.4, 0.5, 0.75).