

THE PECULIAR RADIO STRUCTURE OF QUASAR 1320+299

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The radio source B2 1320+299 is associated with a 20^m QSO. Apart from the core component, it has two outer components on the same side of the QSO; it was therefore classified as of the one-sided ('D2') type. The radio structure is unusual in that the three slightly non-collinear components are apparently unconnected and the projected linear size for any plausible redshift is large for a 'D2' source (Feretti et al. 1982, *Astron.Astrophys.* 115,423). The radio structure has now been mapped with the VLA ($\lambda 20$ & 6 cm, B array and $\lambda 20$, 6 & 2 cm, A array; Figs.1a, b).

Component A : The flat spectrum ($\alpha=0.2$; $S \sim \nu^{-\alpha}$) component coincident with the QSO has a faint extended lobe on one side (Fig.1b; inset); the core shows no depolarization between $\lambda 20$ and 2 cm.

Component B has a steep spectrum ($\alpha=1.1$). The polarization at the peak is high (19%) at $\lambda 6$ cm; between $\lambda 6$ and 20 cm, the depolarization (19 to ~1%) and rotation measure (15 rad m^{-2}) are relatively large. The magnetic field appears to follow the bends in the structure (fig.1b; inset).

Component C also has a steep spectrum ($\alpha=0.9$) and extended emission towards the north west (fig.1b; inset).

ONE, TWO OR THREE SOURCES ? It is unlikely that the three components of 1320+299 form a single source, in view of a) the absence of any observed radio emission linking them; b) the implied large projected linear size. Component A appears to be an independent source with properties typical of powerful sources with apparent one-sided structure, viz., flat spectrum, a bright compact core, possible optical variability (Feretti, et al. 1982) and a linear size $\lesssim 30 \text{ kpc}$ for $z < 2$ ($H_0=50 \text{ kms}^{-1} \text{ Mpc}^{-1}$, $q_0=0.5$). B and C could well be the edge-brightened lobes of a second source. On the other hand, B taken alone appears to have a structure reminiscent of a "head-tail" source. The PSS prints however, show no optical objects between B and C, or coincident with either of them, nor do they show evidence for a cluster in the region. The quasar redshift and deep optical imaging of the field would help clarify the nature of 1320+299.

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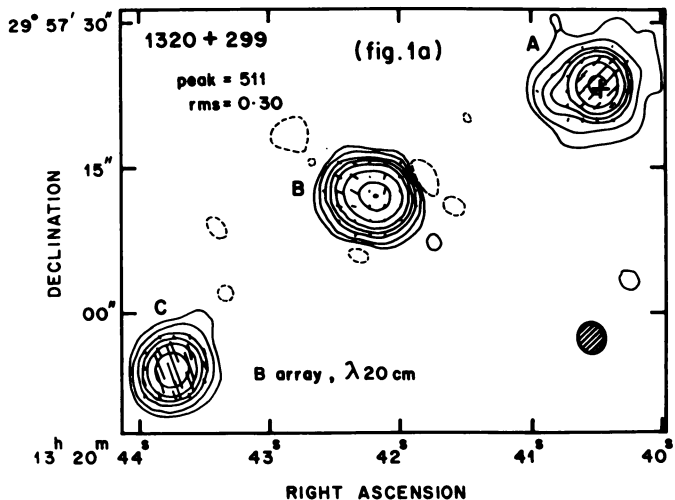


Fig. 1a, b. The radio maps. Linear polarization intensity is shown in the main maps and fractional polarization in the insets. The surface brightness peak, rms and contour levels are in mJy/beam. Contours : a) -1, 1, 3, 10, 20, 40, 100, 300, 500. b) -0.7, 0.7, 1.4, 3, 8, 20, 40, 100, 200; insets : -2, -1, 1, 2, 4, 8, 16, 32, 64, 128.

