RADIO INTERFEROMETER OBSERVATIONS OF COMPACT SOURCES IN SUPERNOVA REMNANTS

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The remains of the progenitor stars of supernovae are likely to have compact radio structure and steep radio spectra, as in the cases of pulsars and SS433. An instrument which is sensitive to compact structure at low frequencies is therefore suitable for a search for new objects. The radio-linked interferometer comprising the MK IA 76m telescope and the Defford 25m telescope situated 127 km to the south has a resolution of $\sim$1 arcsec at 408 MHz and is ideal for such a task.

A compact radio source within the field of view of $\sim$1 deg^2 of the instrument gives rise to an output fringe at a delay and frequency which depends on the source position. On-line data processing produces plots of fringe amplitude versus delay and fringe frequency from which the position of sources in the sky can be measured (Lyne et al. 1982). The positional accuracy is limited by delay resolution and ionospheric variations to $\sim$1 arc min. Sources emitting $\gtrsim$100 mJy in components $\lesssim$1 arc sec in angular size can be readily detected and the instrument is insensitive to extended, low brightness emission such as that from supernova remnants themselves.

Areas of sky in and around 27 remnants selected from the Milne (1979) catalogue were searched in May 1980. The larger remnants were covered by several overlapping search areas. In total 27 sources were detected with an average surface density of 0.86 ± 0.18 deg^{-2} for those stronger than 100 mJy. A proportion of the detected objects are likely to be background extragalactic sources, and so 35 areas at high ($>10^{o}$) galactic latitude were selected at random and searched for compact sources in the same way. The surface density of these presumably extragalactic sources was 0.69 ± 0.16 deg^{-2} and so the slight excess of sources found in or near supernova remnants is not significant. However there may be one or two sources which are indeed galactic and associated with remnants. A list of sources which are interesting either because of unusual spectra (from previously published data) or by virtue of their position in the remnant, is given in the table.

J. Danziger and P. Gorenstein (eds.), Supernova Remnants and their X-Ray Emission, 469–470.

Name		Position (1950) R.A.	Dec
G69.0+2.7	CTB80	19 50 22	32 42
G74.9+1.2	CTB87	20 13 32	37 01
G93.6-0.2	CTB104A	21 30 56	50 50
		21 29 29	49 58
G94.0+1.0		21 24 56	51 47
G119.5+1.0	CTA1	00 14 34	72 53
		00 16 54	73 11
G160.5+2.8	HB9	05 02 14	46 50
		05 02 50	46 53
		05 03 50	46 49
		05 03 39	46 40
G166.0+2.5		05 12 19	41 48
G166.0+4.3		05 25 48	43 15
		05 27 01	43 04
		05 22 31	42 34

REFERENCES

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