

# La Croce e il cielo a 408 MHz

Riproduzione di alcune pagine dell'articolo di Ceccarelli e collaboratori con le osservazioni del ramo Est-Ovest. Lo scopo del lavoro è di produrre una lista completa di radiosorgenti più intense di una unità di flusso (ora chiamata Jansky e corrispondente a  $10^{-26}$  watt/m<sup>2</sup> per Hertz). La tabella (qui è riprodotta solo la prima parte) riporta le nuove radiosorgenti trovate e nella ultima colonna le sigle delle poche radiosorgenti già note.

A. BRACCESI, et al.  
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**A Catalogue of Radiosources**  
From  $\delta = -20^{\circ}$  to  $\delta = +20^{\circ}$  at 408 MHz.

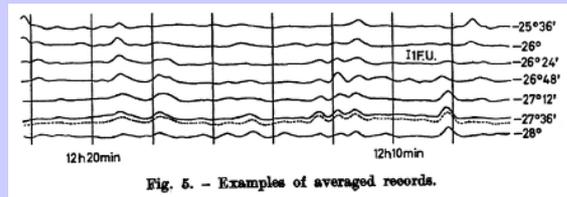
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**Summary.** — After a brief description of the characteristics of the Belgian radio telescope a list of sources between declinations  $-20^{\circ}$  and  $+20^{\circ}$  and between  $0$  and  $12$  hours right ascension is given. For each source we give the coordinates (J2000 epoch) and the flux density. The list (21) includes only sources having a flux density  $\geq 10^{-26}$  watt/m<sup>2</sup>. A second list (219), containing data to  $6 \cdot 10^{-26}$  watt/m<sup>2</sup> is given for a more extended area where additional observations and a more sophisticated data reduction have been used. A comparison is made with the results obtained at Padua.

**1. — Introduction.**  
In the first few months of operation of the E-W arm of the cross radio-telescope at the National Radio Astronomy Laboratory a number of observations have been made starting from the maximum declination attainable. It is our plan to extend these observations up to the North Pole. The purpose of this work is to give a complete list of the sources of our sky at the frequency of 408 MHz and down to fluxes of about one flux unit [ $10^{-26}$  watt m<sup>-2</sup> Hz<sup>-1</sup>] in a comparatively short amount of time. This survey should constitute a useful working list as well as the cross operation of our telescope will be possible and in addition, because of the fast sky coverage which can be obtained, it will constitute a useful set of observations mostly for purposes of cosmological statistics.

TABLE I  
A CATALOGUE OF RADIOSOURCES ETC.

Catalogue number	Position (epoch 1950)		Flux density (J.F.U.)		Radio source
	R.A.	Dec.	$\delta$	$\nu$	
0300-268	03 00 00.5	+20° 31'	1.0		
0300-269	03 00 30.4	+20 30	1.0		
0301-24	03 01 34.3	+20 27	1.0		
0301-25	03 01 38.7	+20 26	1.0		
0302-24	03 02 47.9	+20 11	1.1		
0302-25	03 02 51.7	+20 12	1.0		
0304-26	03 04 25.4	+20 21	1.0		
0304-29	03 04 25.6	+20 15	1.0		
0305-27	03 05 28.2	+20 14	3.0		
0305-28	03 05 28.4	+20 16	1.1		
0307-20	03 07 53.8	+20 13	2.1	(2.4)	
0308-29	03 08 23.1	+20 20	1.0		
0311-21	03 11 25.0	+20 20	1.0		
0317-27	03 17 38.9	+20 26	2.3		
0318-29	03 18 24.1	+20 20	1.0		
0319-29	03 19 22.0	+20 15	3.0		(PNS 2319-29)
0320-26	03 20 21.0	+20 26	2.0		
0321-26	03 21 20.1	+20 26	1.0		
0322-27	03 22 23.2	+20 23	1.0		
0323-26	03 23 26.9	+20 11	1.1		
0324-27	03 24 23.2	+20 21	1.2		
0325-26	03 25 22.0	+20 20	1.0		
0327-26	03 27 22.0	+20 20	1.0		
0328-29	03 28 21.1	+20 20	1.0		
0329-26	03 29 21.0	+20 20	1.0		
0330-26	03 30 21.0	+20 20	1.0		
0331-26	03 31 21.0	+20 20	1.0		
0332-26	03 32 21.0	+20 20	1.0		
0333-26	03 33 21.0	+20 20	1.0		
0334-26	03 34 21.0	+20 20	1.0		
0335-26	03 35 21.0	+20 20	1.0		
0336-26	03 36 21.0	+20 20	1.0		
0337-26	03 37 21.0	+20 20	1.0		
0338-26	03 38 21.0	+20 20	1.0		
0339-26	03 39 21.0	+20 20	1.0		
0340-26	03 40 21.0	+20 20	1.0		
0341-26	03 41 21.0	+20 20	1.0		
0342-26	03 42 21.0	+20 20	1.0		
0343-26	03 43 21.0	+20 20	1.0		
0344-26	03 44 21.0	+20 20	1.0		
0345-26	03 45 21.0	+20 20	1.0		
0346-26	03 46 21.0	+20 20	1.0		
0347-26	03 47 21.0	+20 20	1.0		
0348-26	03 48 21.0	+20 20	1.0		
0349-26	03 49 21.0	+20 20	1.0		
0350-26	03 50 21.0	+20 20	1.0		
0351-26	03 51 21.0	+20 20	1.0		
0352-26	03 52 21.0	+20 20	1.0		
0353-26	03 53 21.0	+20 20	1.0		
0354-26	03 54 21.0	+20 20	1.0		
0355-26	03 55 21.0	+20 20	1.0		
0356-26	03 56 21.0	+20 20	1.0		
0357-26	03 57 21.0	+20 20	1.0		
0358-26	03 58 21.0	+20 20	1.0		
0359-26	03 59 21.0	+20 20	1.0		
0400-26	04 00 21.0	+20 20	1.0		



L'articolo che descrive la "Croce del Nord" nel suo assetto definitivo e che mostra la qualità raggiunta dal sistema di acquisizione dati combinando i segnali provenienti dal ramo Est-Ovest e dal ramo Nord-Sud.

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**The Italian Cross Radio Telescope.**  
III. — Operation of the Telescope.

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**Summary.** — This paper follows after a while the first two papers of the same title describing the project of the antenna and the receiving system of the Italian Cross Radio Telescope. When these papers were published not all the technical problems relative to the system had been solved. Furthermore some improvements have been added to the original plans. The actual performance of the instrument can now be described in detail.

The system at the present stage consists only of a part of the originally planned telescope: the East section of the E-W arm and 320 meters (32 elements) of the N-S arm (\*\*). It is rather unlikely that the original plans will ever be completed. Nevertheless the operation as a T rather than as a cross antenna was found satisfactory. The phase stability between the two arms is sufficiently good and the reduction of the total receiving area is compensated by the better noise figure of the receivers now in use. The reduction in length of the N-S arm is however a crude cut-down from the original project, which did not find an adequate financial support.

Systematic delays in the construction are in fact the only reason for the delay between the planning and the operation of the telescope. It is a fact that operation of the instrument as a synthetic pencil beam radio telescope began only in December 1962.

In spite of this, the actual instrument represents a noticeable technical achievement. Its operation, as a matter of fact, is as complex as that of the system originally planned.

(\*) Now at ESTEC Laboratory.  
(\*\*) A. BRACCESI and M. CECCARELLI: Nuovo Cinema, 23, 208 (1962).  
(\*) G. GELATO, C. BONATELLI and G. SINDIGALLI: Nuovo Cinema, 23, 254 (1962).



Una registrazione tratta dal primo programma osservativo.



Si celebra dopo i primi successi:  
(da sinistra in alto) Roberto Fanti, Marcello Ceccarelli, Alessandro Braccesi, Laura Erculiani, Gavril Grueff,  
(in basso) non inquadrata Carla Fanti, Giuliano Colla, Liliana Formiggini, Gianfranco Sinigaglia, due esauste bottiglie.