National Aeronautics and Space Administration
Goddard Space Flight Center
Contract No. NAS-5-9299

ST - IGA - 10476

FREQUENCY SPECTRA OF THE SOURCES 3C 295 AND 3C 380

by

L. L. Bazelyan
S. Ya. Braude
A. V. Men'

(USSR)

14 APRIL 1966

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Astronomicheskiy Tsirkulyar
No. 357, 5 - 7,
Izd. B.A.S. AN SSSR,
25 February 1966.

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S. Ya. Braude
& A. V. Men'

SUMMARY

The measurements of flux densities of the sources 3C 380 and 3C 295 were made on the basis of the method described in [1] during the first half of 1965, and utilizing the same wideband interferometer, in the frequencies of 20 — 40 Mc.

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* *

The first of these sources, that is, 3C 380 is usually taken as the standard (for example, in [2, 3]) and the confirmation of the linearity of its spectrum through the frequency of 20 Mc/s allows to use it as such at lower frequencies also. As to measurements of 3C 295, they allowed to refine the frequency of intensity maximum of this source, which is one of the most remote and identified with a quasi-star, by extending the spectrum into the region of lower frequencies.

Because of insufficient radiotelescope resolution the observations of 3C 380 were subject to interferences from the side of the sources 3C 381 and 3C 405. Their contribution was estimated by way of computation of passages of the observed and interfering sources. At the same time the spectra of the sources 3C 380 and 3C 381 were extrapolated to the region of lower frequencies with the same spectral indices as in the higher frequencies, while for 3C 405 the spectrum measured in [4] was utilized. The observations of 3C 295 were not subject to influences of other sources; however, measurements could be conducted in the 25 - 40 Mc band, while at 20 Mc only the upper estimate was made, for the flux was found to be below the limit of radiotelescope's revelation capability (range).

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* Presented at the All-Union Conference on Radioastronomy, Khar'kov, 1965

(*) CHASTOTNYYE SPEKTRY ISTOCHNIKOV 3C 295 I 3C 380.

The densities of fluxes in high frequencies, necessary for constructing the spectra, were taken the same as in the work [5]. In order to further refine the spectra of sources, particularly 3C 295, utilized besides these data were also the results of the review of 2C in the frequency of 81 Mc [6]. The densities of fluxes in this review for the sources considered were diminished by 5 percent, which follows from the comparison of the review 2C data with those of [5]. The spectra of 3C 380 and 3C 295 are shown in Fig. 1.

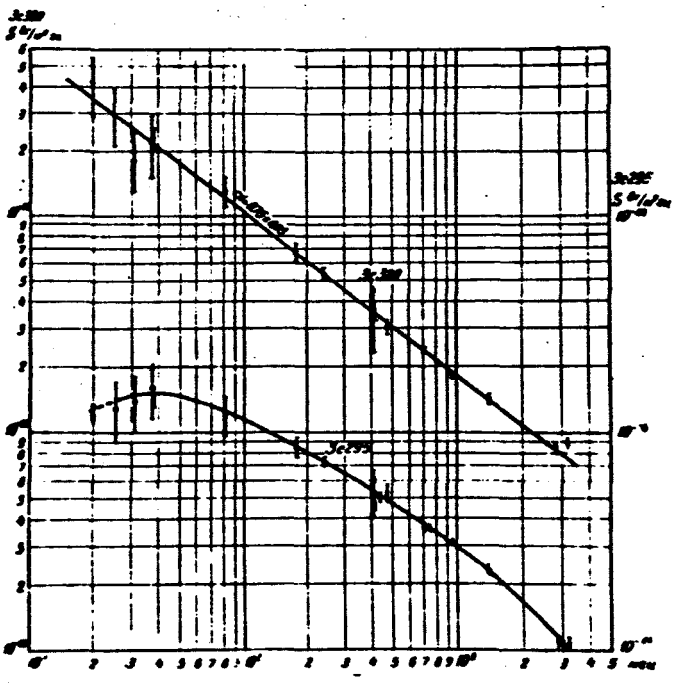

Fig. 1

As may be seen from the figure the spectrum of 3C 380 remains linear with a spectral index $\alpha = 0.75 \pm 0.03$ through 20 Mc; as to that of 3C 295, it has a maximum in the frequency of about 35 Mc/s.

Usually the spectrum deformation of this source in low frequencies is linked with synchronous reabsorption. The structure of 3C 295 was studied in the frequency of 159 Mc [7]. It was found that the source consists of two ellipse-like components spaced by 4" and equal in dimensions, each of which having 1.7" along the major axis and less than 1" along the minor axis. The estimate by the formulas of the work [8] in the assumption that the source's flux is conditioned by the two components with equal intensities and with a character of the spectrum,* conditioned by reabsorption only, gives

* [see Fig. 1]

an angular dimension equal to 0.6".

Attention is drawn by the excessively smooth spectrum transition toward the region of positive spectral indices which may be linked with a nonuniform distribution of the synchrotron radiation along the components of the source and an irregular distribution of the flux between the components [8, 10].

*** THE END ***

Institute of Radiophysics and
Electronics of the Ukr SSS Ac. of Sc,
KHAR'KOV
27 January 1966.

Translated by ANDRE L. BRICHANT
on 14 April 1966.

Contract No.NAS-5-9299
Consultants & Designers, Inc.
Arlington, Virginia

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