We present the results of absolute flux measurements of Cassiopeia-A, Cygnus-A, Taurus-A, and Virgo-A in the wavelength range 1.8-4.17 cm. Using results that were obtained previously we construct spectra in the range 1.8-100 cm. We discover variability in the radio emission from Taurus-A, as well as "steps" in the spectrum of Taurus-A with spectral index $\alpha = 0$ in the 2-4-cm region.

In 1975 and 1977-1978 we made measurements in the 1.8-4.2-cm range as a continuation of the absolute measurements of the intensity of radio emission from discrete sources which had been at our Institute in the range from 3 to 100 cm (cf., e.g., [1]). All of the measurements were made by the same method (using a "black" disk in the Fresnel zone [2]) and on the same antenna (diameter $= 7$ m). The "black" disk was placed on a 25-m tower at a distance of 100 m from the radiotelescope. (The curtailment of the far zone was $n = 25-50$.) We used radiometers which were switched in the ranges 7.2-8, 12.4-13.8, and 15-16.7 GHz, with sensitivity of $1^\circ K$, and a time constant $\tau = 1$ sec.

The technique of analog measurements has already been described [3]. In the measurements that were conducted in September 1978, we used automatic reduction on a microcomputer, and this enabled us to improve the actual sensitivity significantly by increasing the accumulation time, and also to control the parameters of the radiotelescope directly during the measurements.

A block diagram of the measurements is presented in Fig. 1. The results of the measurements are presented in Table 1.

In Fig. 2 we graphically display the spectrum of Cassiopeia-A according to all of our measurements, beginning in 1967, over the wavelength range from 1.8 to 100 cm. All of the flux values have been reduced to the epoch 1977 by allowing for the change in flux of Cassiopeia-A from year to year. Since the yearly change in flux, $\gamma$, depends on frequency [3], we analyzed all of the data which have been obtained at our Institute by the "black" disk method [4-11, 18, 21].

In Fig. 3 we show how the ratio of the fluxes of Cassiopeia-A and Cygnus-A changes as a function of the time of measurement in various wavelength ranges ($\lambda = 2.0-5.28$, 9.48-10.95, 20-25.2, 28.9-30, 38.96-42.9, and 50-53.4 cm). On the same graph, we also present the results of our relative measurements at $\lambda = 25$ and 30 cm in April 1975, and at $\lambda = 28.9$ cm in December 1977. The results of measurements at neighboring frequencies, $S_0^{\text{source}}$ and $S_0^\prime/\lambda^2$, are presented at some mean wavelength $\lambda_0$ in the range. For each of the ranges, the value of $\lambda_0$ is equal to 3.2, 10, 20, 30, 40, and 50 cm:

![Fig. 1](image)
Fig. 2

Fig. 3

Fig. 4