EXTRAGALACTIC SOURCE VARIABILITY STUDIES OF COMPLETE SAMPLES WITH RATAN-600

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We present preliminary results of the study and analysis of complete and limited in flux density source samples from the Zelenchuk and MGB surveys carried out with the RATAN-600 radio telescope.

This work pursues two the main aims:

- Investigation of general statistical characteristics of a discrete source sample;
- Investigation of variability processes in discrete sources in a wide range of wavelengths. That assumes a study of the amplitude and frequency characteristics of variability on all time scales from several years to several days.

The following results of this investigation have been revealed (or confirmed):

1. The long-term variability with a time-scale more than several years. Our observations have allowed to trace a complete evolution cycle of the isolated flare in a number of sources from its occurrence before decay and to specify its amplitude and frequency characteristics. There is no plateau at the maximum of a flare, a flare increase and decay are well described by a exponential temporal law. Such a form of flare is not described by any model.
2. The variability with a time-scale about tens of days. We consider the variability with a week time scale as an important result of our investigation. It is a new type of the variability and, as it was found out, it is widespread enough. Approximately 10% of sources with flat spectra have a similar variability. The variability often has a cyclic nature and, basically, is exposed at frequencies below 10 GHz.
3. The existence of variability with a time-scale about four days for all compact radio sources. We are sure that the given type of variability is not a property of a radio source, but a result of radiation propagation in inhomogeneous interstellar medium.