

AGN intra-day and inter-day variability studies on VIRAC radio telescopes

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Starting from year 2017, the radio telescopes of the Ventspils International Radio Astronomy Centre (VIRAC) are used to study the intra-day and inter-day variability of various types of active galactic nuclei. These studies are based on a generalization of the results of a 40-year monitoring of the fluxes of extragalactic radio sources conducted at the Michigan Radio Astronomy Observatory in the USA using wavelet and Fourier analysis performed at the Odessa Observatory of the Radio Astronomy Institute of the National Academy of Sciences of Ukraine. On their basis, a catalogue was created for the properties of the variability of extragalactic radio sources.

The extension of the temporal spectrum of flux changes to inter-diurnal and diurnal scales is carried out on VIRAC radio telescopes RT-32 and RT-16 respectively with 32 and 16 meters' antennas. The intra-day variability in the calibration source 3C295 (Seyfert galaxy of type II) is detected and preliminary results presented in the poster for discussion.

Observations of a number of other radio sources (3C 273, 3C 454.3, OJ 287, BL Lac) are suspected for these types of variability and scheduled for monitoring observations.

The poster discuss possibility for observations of these promising objects during VLBI sessions by EVN and simultaneous long-term total flux monitoring using VIRAC antennas. The temporal changes in fluxes linked with VLBI maps opens opportunity to determine the nature of the physical processes that form fast flux changes of various types of active galactic nuclei.