

Long-term variability of a complete sample of flat-spectrum radio sources at declinations 10° - $12^{\circ}30'$ (J2000)

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Abstract

The paper reports the results of ten-year centimeter-wavelength observations with the RATAN-600 radio telescope of a complete sample of 83 flat-spectrum sources from the GB6 catalog of the MGB Survey, with $S_{4.85} < 200$ mJy at declinations 10° - $12^{\circ}30'$. Starting in 2000, the observations were conducted simultaneously at six frequencies in the range 0.97-21.7 GHz. Seventy-six sources (including 54 quasars) have been identified with optical objects, which have redshifts in the range $z = 0.331$ - 3.601 . Analysis of light curves and spectra at different activity phases has shown that, in most cases, the dynamics of the development of flares is consistent with a model in which the variability results from the evolution of a shock in a radio jet. A relationship between the time scales for the rise and fall of the flares has been found. There is no redshift dependence of the true linear dimensions of the radiating regions and the variability indices obtained over ten years. These facts can be interpreted as an absence of cosmological evolution of quasars at least up to $z \approx 3$. © 2012 Pleiades Publishing, Ltd.

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