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Evolution of luminosity-linear size relation for sources with steep radio spectrum

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We consider four samples of steep-spectrum radio sources from our catalogue UTR-2 at the decameter band. These contain galaxies and quasars of both spectral types - with linear steep spectrum and break steep spectrum. To obtain the relation of low-frequency luminosity, at the frequency 25 MHz, L_{25} and linear size R of sample objects we determine one at the different redshift ranges at the frame of LambdaCDM Universe model. The derived relations show positive power trend ($L_{25} \sim R^n$, $n = 0.5 \dots 2.0$) for galaxies and quasars. Since the object's luminosity ratio for monochromatic luminosities at different frequency ranges is independent from the Universe model, one is examined on the luminosity ratio-linear size relation. For the purpose of estimate on the linear size's cosmological evolution, we determine linear size-redshift relations at the narrow luminosity bins ($R \sim (1+z)^k$, $k = 0.7 \dots 1.87$) in our samples. It is very interesting, that obtained luminosity ratio-linear size relations at higher frequency ranges (infrared, X-ray) display two branches of evolution of steep-spectrum radio sources.

Author: Dr MIROSHNICHENKO, Alla (Institute of Radio Astronomy, NAS of Ukraine)

Presenter: Dr MIROSHNICHENKO, Alla (Institute of Radio Astronomy, NAS of Ukraine)

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