
[JGC-21] Radio Variability and Random Walk Noise Properties of Four blazars

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We present the results of a time series analysis of the long-term radio lightcurves of four blazars: 3C 279, 3C 345, 3C 446, and BL Lacertae. We exploit the data base of the University of Michigan Radio Astronomy Observatory (UMRAO) monitoring program which provides densely sampled lightcurves spanning 32 years in time in three frequency bands located at 4.8, 8, and 14.5 GHz. Our sources show mostly flat or inverted (spectral indices $-0.5 < \alpha < 0$) spectra, in agreement with optically thick emission. All lightcurves show strong variability on all time scales. Analyzing the time lags between the lightcurves from different frequency bands, we find that we can distinguish high-peaking flares and low-peaking flares in accord with the classification of Valtaoja et al. (1992). The periodograms (temporal power spectra) of the observed lightcurves are consistent with random-walk powerlaw noise without any indication of (quasi-)periodic variability. The fact that all four sources studied are in agreement with being random-walk noise emitters at radio wavelengths suggests that such behavior is a general property of blazars.

[JGC-22] A Survey for Globular Clusters in Cosmic Void Galaxies

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We carry out the first survey for globular clusters (GCs) of three galaxies in cosmic voids using Hubble Space Telescope (HST) Advanced Camera for Survey archival F606W and F814W images. While all sample galaxies are classified as early-type galaxies based on ground-based imaging, the high resolution HST images reveal that they are actually spiral galaxies. We identify the point sources with red colors typical for GCs as GC candidates in the color-magnitude diagrams. As a result, we find a significant number of GC candidates. The spatial and radial distribution of GCs show central concentration on each galaxy region. Their mean colors are similar to that of the Milky Way and M31 GCs. The void GCs are somewhat bluer by ~ 0.1 mag than cluster and field GCs in early-type galaxies with similar luminosity to our samples, but the discrepancy is not significant. We also estimate the specific frequencies of GCs in these galaxies and the values are consistent with those in field and cluster galaxies with similar luminosity. From these results, we suggest that the formation process of void GCs is similar to that of GCs in other environments. The further implications will be discussed.