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The long-term optical study of VHE blazars

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To study optical variability of extragalactic objects, namely VHE blazars, we are conducting in Abastumani Observatory since 1997 a long-term campaign using dedicated telescopes, which allowed to collect ˜300 000 CCD frames during 2 800 nights. This extensive monitoring campaign over 100 blazars during five years was carried out in BVRI bands and later on from 2002 mainly in R band using the 70-cm meniscus (f/3, SBIG ST6 and Apogee Ap6E), 125-cm Ritchey-Chretien (f/13, Apogee Ap6E) and Calar-Alto Observatory (123-cm and 220-cm) telescopes. Most densely sampled sources are 1ES 0229+200, 1ES 0806+524, 1ES 1011+496, Mrk 421 Mrk 501, 1ES 1221+302, Pg 1553+113, 1ES 1959+650, 1ES 2344+514 and others.
The frames have been reduced using Daophot II and homogenous sample of lightcurves have been constructed. The amplitudes of long-term variability are within 0.3-1.5 magnitudes. Few sources show Intra-day variability within 0.05-0.15 magnitudes, while intra-night/micro-variability is below 0.05 magnitudes. The results of multiwavelength campaigns with Whipple, VERITAS, HESS and MAGIC are also presented. To extend in the future optical photometric, polarimetric and spectral survey of fainter sources with high temporal resolution, we are considering purchase of two PanSTAR like telescopes.

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