

ANALYSIS OF THE OPTICAL POLARIZATION OF BLAZARS BASED ON LONG-TERM MONITORING DATA

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ABSTRACT

Blazars are a subclass of active galactic nuclei whose jets are pointed toward the observer at a small angle. These objects are characterized by highly variable flux densities across all spectral ranges, as well as high and variable polarization. Studying the polarization of blazar optical radiation is a key indirect method of investigating the structure of the magnetic field in the emitting region. Long term monitoring of blazar optical polarization has revealed ordered changes in the EVPA (electric vector position angle) during certain periods, which are commonly called in the literature as "EVPA rotations" [1, 2].

This study searches for such events in the polarization curves of 32 blazars, based on long-term optical photopolarimetric observations, and analyzes their parameters. The study proposes a criterion for rotation completeness and examines differences in the average rotation parameters for blazars of different subclasses, such as BL Lac and FSRQ. The results show that the rotation amplitude decreases with increasing average polarization during rotation. Additionally, it is shown that, for one-third of the sample, the average direction of the optical polarization position angle aligns well with the radio jet's position angle.

References

1. Larionov V. M. et al., 2008, A&A, 492, 389
2. Marscher A. P. et al., 2010, ApJ, 710, L126