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Quasi-simultaneous photometric, polarimetric, and spectral observations of Jupiter-family comet 108P/Ciffreo

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Comets of the Jupiter family are quite popular for study by both space missions and ground-based observations due to their orbits. This makes it possible to study these comets during their several approaches to the Sun and observe their evolutionary changes. The results of imaging photometric and long-slit spectroscopic observations of comet 108P/Ciffreo obtained in 2014 are presented. The observations of the comet were made at the 6-m telescope BTA SAO using the broad-band R filter. The low dust production Afρ=55±2 cm was obtained in the observational period of the comet. From the cometary spectra within the range 3800–7000 Å, emission features belonging to the C2, C3, and NH2 molecules were identified. In turn, morphologic analysis of photometric data applying digital filters showed the presence of asymmetrical coma, tail, and a slow-moving secondary object near the nucleus (the blob). A similar fragment was found by Kim et al. (2023) in the cometary coma based on observation in 2022. This structure probably results from a specific topography of the cometary nucleus, which may be responsible for the collimation of the jets and the formation of the observed blob.

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