Nuclear Activity in Galaxies Across Cosmic Time
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Search for high-redshift blazars with Fermi-LAT

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Abstract. High-redshift blazars ($z \geqslant 2.5$) are one of the most powerful classes of gamma-ray sources in the Universe. These objects posses the highest jet powers and luminosities and have black-hole masses often in excess of 10^9 solar masses. In addition, high-redshift blazars are important cosmological probes and serve as test objects for blazar evolution models. Due to their large distance, their high-energy emission peak is downshifted to energies below the GeV range, which makes them difficult to study with Fermi/LAT and only the very brightest objects are detectable. Hence, only a small number of high-redshift blazars could be detected with Fermi/LAT so far. In this work, we present a strategy to significantly increase the detection statistics at redshift $z \geqslant 2.5$ via a search for flaring events in high-redshift gamma-ray blazars whose long-term flux remains below the sensitivity limit of Fermi/LAT. Seven previously GeV undetected high-redshift blazars have been identified from their bright monthly outburst periods, while more detections are expected in the future.

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