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LST-1's Early Achievements in AGN Observations: Discovery of the Farthest Blazar OP 313 at VHE Gamma Rays

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Flat Spectrum Radio Quasars (FSRQs) are some of the most powerful and dynamic sources in the Universe, exhibiting emission across the entire electromagnetic spectrum, from radio to gamma rays. Despite their intense luminosity, detecting FSRQs at very-high-energy (VHE) gamma rays (E>100 GeV) remains a challenge, largely due to internal absorption of these photons within the source itself. To date, only nine FSRQs have been observed at such high energies, underscoring the difficulty of these detections.

The recent detection of OP 313, a notable FSRQ at a redshift of z=0.997, marks a significant milestone. Gamma-ray absorption by extragalactic background light at this redshift presents a formidable challenge for contemporary imaging atmospheric Cherenkov telescopes. However, the Large-Sized Telescope prototype (LST-1), a precursor to the Cherenkov Telescope Array Observatory (CTAO), succeeded in detecting OP 313 at VHE gamma rays during a high-activity state. This success illustrates LST-1's exceptional lower energy threshold, demonstrating the capabilities of the future CTAO in advancing our understanding of FSRQs. This achievement not only adds to the exclusive list of FSRQs detected at VHE but also establishes OP 313 as the most distant blazar detected in this energy range.

In this contribution, we will present the recent results on Active Galactic Nuclei from LST-1, with a focus on the discovery of OP 313, the furthest blazar ever detected so far at VHE gamma rays. The supporting observations from the MAGIC telescopes will also be briefly discussed, highlighting the collaborative effort in this significant detection.

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