

Optical spectroscopy and imaging of blazars for the Cherenkov Telescope Array Observatory

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Blazars are the brightest persistent sources in the high-energy and very-high-energy (VHE) gamma-ray sky. Because their UV/optical radiation is often dominated by non-thermal, and, in the case of BL Lacs, featureless continuum radiation, the determination of their redshift is extremely difficult. Only about 50% of gamma-ray blazars have a firm measurement of their redshift. This strongly reduces the precision in the modelling of their VHE emission, involving the absorption due to the extragalactic background light, which is dependent on redshift. Furthermore, the effects on their radiation of proposed physics beyond the Standard Model such as Lorentz Invariance Violation and Axion-Like Particles cannot be reliably investigated. During the Cherenkov Telescope Array Observatory (CTAO) operations, several hundreds of new blazars will be detected, most of them without redshift. In order to mitigate this condition, we devised an optical observing campaign. Likely targets were selected through simulations of CTAO observations using the Fermi-LAT 3FHL catalog as a starting point. Our campaign, started in 2019, has been recognized as necessary support for the AGN Key Science Project of the CTAO. It involves deep observations using, among others, 10-m class telescopes such as Keck, SALT, GTC and the VLT. In this talk, we will present the status of our campaign, its future developments and other activities we are pursuing.

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