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The Cherenkov Telescope Array potential to probe the extreme extragalactic sky

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The Fermi-LAT sources and specially the high-energy catalogues, 2FHL and 3FHL, provide the best unbiased proxy to the very-high energy (VHE, $E > 100$ GeV) extragalactic sky. Meaningful extrapolations can be derived therefrom, as to what are the expectations for future studies in this extreme observational window. Recent observational data in hard X-rays support the existence of a population of extreme high-energy synchrotron peaked blazar sources (EHSPs), composed of objects with a synchrotron peak frequency above $1E17$ Hz. Observations with the current generation of VHE instruments, as well as Fermi-LAT seem to corroborate the existence of a population of EHSPs with inverse-Compton (IC) peak above 100 GeV in the γ -ray band. Current observations might nevertheless be probing only the low-energy side of the IC component, which could easily reach beyond the TeV range. As a result, these putative EHSPs are clearly undersampled by Fermi-LAT. In this talk, I will present the Cherenkov Telescope Array (CTA), whose first prototype telescope on site has just been inaugurated in La Palma last October. I intend to show that future VHE observations with CTA, covering the range between 20 GeV to 300 TeV, are in a good position to probe the poorly known class of extreme HSP sources, expanding our understanding of the blazar phenomenology and bringing new elements to a unified model of jetted active galactic nuclei.

Are you presenting on behalf of collaborations or institutions?

for the CTA Consortium

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