

Expected performance of the ALTO particle detector array designed for 200 GeV - 50 TeV gamma-ray astronomy

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Need for a continuous observation of the soft spectrum sources

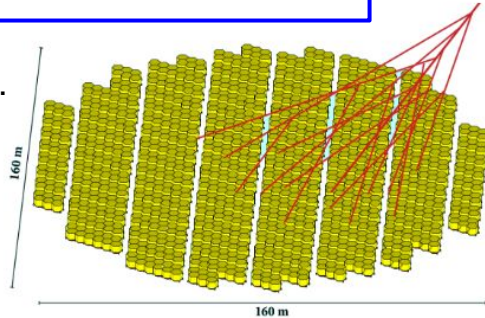
- For ground-based particle detector arrays, extragalactic sources are difficult to detect because they have a soft spectrum due to extragalactic background light (EBL) absorption
- For instance, HAWC has detected two nearby sources: Mkn 421 and Mkn 501
- Our work focuses on the possibility of a wide field-of-view particle detector design and altitude optimised for **soft-spectrum** sources, opening the possibility for the detection, characterisation and monitoring of many more Active Galactic Nuclei and Gamma Ray Bursts

Monte Carlo study results

- We have performed a full Monte Carlo analysis which includes CORSIKA, GEANT4, shower reconstruction, the SEMLA analysis
- We demonstrate here that, it is possible to detect AGNs and GRBs with the hardware choices we have made

Proposed ALTO particle detector array using
water Cherenkov technology

altitude: ~ 5 km a.s.l.



VHE gamma-ray source	Approximate time to reach a 5- σ detection
GRB 180720B *	~ 38 seconds
PKS 2155-304 flare	~ 24 minutes

* extrapolated to the time of GRB alert

- In order to further enhance the performance during darkness, we also study the possibility of adding **Cherenkov Light Collectors (CLiC)**

See the contribution by **Gašper Kukec Mezek** at this conference

Thank you for your attention

