THE DETECTOR

The Large High Altitude Air Shower Observatory (LHAASO) will be built in the Sichuan Province (China) at 4410 m a.s.l. The experiment will be made by four detectors

1) KM2A
   - 5635 m² plastic scintillators, located on a triangular grid with 15m spacing
   - 1221 36 m² water cherenkov detectors, located on a triangular grid with 30m spacing
2) WCDA
   - 300x300 m² water Cherenkov detector
3) WFCTA
   - 24 wide field of view Cherenkov (and Fluorescence) telescopes
4) SCDA
   - 452 close packed burst detectors

Due to its very large coverage both for the electromagnetic ($5 \times 10^5$ m²/10^6 m² = 5x10^(-3)) and muon ($5 \times 10^4$ m²/10^6 m² = 5x10^(-2)) EAS components LHAASO will be a very high resolution experiment.

RESULTS

c², µ and π lateral distribution have been obtained at different energies.
c² density < 1 particle m⁻² at ~200 m for 5x10¹⁵ eV and ~400 m for 5x10¹⁶ eV ⇒ radius containing the detectors fired in an event For 5x10¹⁷ eV c² density > 10⁵ particles m⁻² (detector saturation) at 50 m from the shower core

MASS GROUPS SEPARATION

A first attempt to evaluate the possibility of separating events in samples generated by different mass groups can be obtained studying the ratio between the total muon and electron numbers at observation level:

$$ Y = \frac{\log N_{\mu}}{\log N_e} (\beta = 0) $$

Using this first, simple approach a clear separation between light and heavy primaries is expected. Deeper investigations using all detectors included in the LHAASO experiment will be pursued to separate more than two mass groups.

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