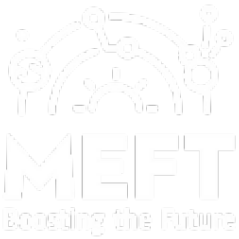

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Measurement of the features of the muon number distribution using the MARTA engineering array

Thursday, 28 January 2021 10:10 (10 minutes)

Extensive air showers offer a unique opportunity to study high energy hadronic interactions, tune up-to-date hadronic interaction models and determine the origin and acceleration mechanisms of ultra-high-energy cosmic rays, through the analysis of shower observables and shower reconstruction. We recently showed that the muon number distribution in showers with low muonic content has a feature that can be used to constrain the production cross-section of neutral pions emerging from the first proton-Air interaction. However, the detection of muons is not easily disentangled from the detection of electromagnetic particles in current cosmic ray experiments. The goal of this presentation is then to propose the measurement of the mentioned feature using the MARTA engineering array and assess to which precision this measurement can be achieved, complementing the theoretical work we previously published.

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