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Measurement of the Muon Production Depth

The surface detector array of the Pierre Auger Observatory allows for an experimental estimation of the muonic longitudinal development of extensive air showers in an indirect way. From the FADC traces of the surface detectors far from the core it is possible to reconstruct the Muon Production Depth distribution (MPD). We characterize the goodness of this reconstruction for zenith angles around 60 degrees and different energies of the primary particle. The maximum of this distribution, X_{max} , interpreted as the point where the muon production reaches a maximum along the cascade development, is explored as a sensitive parameter to infer the mass composition of cosmic rays.

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