

Mass composition studies with Pierre Auger Observatory

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Mass composition studies with Pierre Auger Observatory The study of the mass composition of cosmic rays is important to understand their origin. At ultra-high energies, the primary mass can only be estimated from the shower observables. These include the depth of maximum of the longitudinal shower development, X_{max} , and different observables measured with the surface detector array such as the production depth distribution of muons. Pierre Auger Observatory allows the direct measurement of X_{max} with its fluorescence telescopes and the muon production depth can be derived indirectly from the particle arrival time distribution at ground. In this talk we will introduce the analysis steps for measuring X_{max} and present recent results on the mean value of X_{max} and its shower-to-shower fluctuations. In the second part of the talk we will compare these results with estimates of the mass composition using the surface detector data of the observatory.

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