

# Probing hadronic interactions at ultra high energies with extensive air showers

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## Abstract content

Due to the discrepancy between the observed and predicted average number of muons in air showers, the connection between the average muon content and the development of air showers has been studied extensively in the past. Here we present a study of the physics of the fluctuations of the muon content. In addition to proving that the fluctuations must be dominated by the first interactions, we show that the fluctuations and entire shape of the distribution of the number of muons is determined by the energy spectrum of hadrons in the first interaction.

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