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Studies of muons in extensive air showers from ultra-high energy cosmic rays observed with the Telescope Array surface detector

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The number of muons from the ultra-high energy cosmic rays (UHECRs) is measured with the surface detectors (SDs) on the ground. Its MC prediction depends on hadronic interaction models and the composition. By comparing the measured number of muons with the MC prediction, hadronic models can be tested.
The Pierre Auger Observatory reported that the number of muons measured by water Cherenkov detectors is about 1.8 times larger than the MC prediction for proton, QGSJETII-03 model. The number of muons in the Auger data is also larger than the MC prediction for iron. The Telescope Array (TA) experiment uses the SD made of plastic scintillator. It is sensitive to the electromagnetic component that is the major part of secondary cosmic rays from UHECR air showers. An analysis approach to increasing muon purity is necessary to calculate the number of muons in the TA SD data. In this presentation, we report the method and the result of the comparison of charge density of muon-enriched sample in the data with that in the MC simulation.

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Primary author: Mr TAKEISHI, Ryuji (Institute for Cosmic Ray Research, Univ. of Tokyo)

Presenter: Mr TAKEISHI, Ryuji (Institute for Cosmic Ray Research, Univ. of Tokyo)

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