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The preliminary measurement of mean logarithmic mass of cosmic rays in the knee region with muon contents by LHAASO-KM2A

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The kilometer-square array (KM2A) of the Large High Altitude Air Shower Observatory (LHAASO, located at 4410 m above sea level with an atmospheric depth of 600) can simultaneously measure air shower sizes of both electromagnetic particles and muon contents with high precision for cosmic rays with energies in the knee region. The energy is reconstructed by combining parameters of muons and electromagnetic particles, which is weakly dependent on the mass composition of cosmic rays. The number of muons observed at the ground from air showers is sensitive to the mass composition of cosmic rays. The preliminary results of mean logarithmic mass of cosmic rays as derived from the number of muons is presented. The systematic uncertainty of hadronic interaction models on the mean logarithmic mass is discussed.

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