Measurement of the iron spectrum with CALET on the International Space Station

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In the last few years several classes of theoretical models are proposed to explain the spectral structure observed in nuclei spectra around a few hundred GeV/n. In order to discriminate among different interpretation it has become important to provide new precise measurements of the region of transition for each nuclear species. In this scenario a precision measurement of the iron spectrum is of particular interest as iron provides favorable conditions for observations due to its largest relative abundance among the heavy elements and also for a negligible contamination from spallation of higher mass elements.
The CALorimetric Electron Telescope (CALET), in operation on the International Space Station since 2015, collected a large sample of cosmic-ray iron over a wide energy interval.
In this contribution, we present a measurement of the iron spectrum in the range of kinetic energy per nucleon from 10 GeV/*n* to 2.0 TeV/n with a significantly better precision than most of the existing measurements.
The analysis of the data and the detailed assessment of systematic uncertainties are described and results are compared with the findings of previous experiments. The observed differential spectrum is consistent within the errors with previous experiments.
In the region from 50 GeV/*n* to 2 TeV/*n* our present data are consistent with the hypothesis of a single power law spectrum with spectral index -2.60 ±0.03.