Measurement of Iron Spectrum in Cosmic Rays with DAMPE

Iron nuclei are the most abundant heavy nuclei in cosmic rays beyond silicon, and they interact much more with the interstellar medium during propagation compared to lighter nuclei, promoting the significance of precision measurement of the cosmic ray spectrum of iron nuclei, which is crucial for understanding the origin, acceleration, and propagation mechanisms of heavy cosmic ray.

The Dark Matter Particle Explorer (DAMPE), with broadest observational energy range among the space-based cosmic ray detectors in operation at present, could play an important role in measurement of the feature of energy spectrum of Iron up to hundred TeV. Recently, DAMPE collaboration develops a machine learning-based algorithm for track reconstruction to reduce the efficiency decrease caused by the common-mode noise of the electronics above hundred GeV. With ML track mentioned above, we will present the latest progress on the direct measurement of cosmic ray iron nuclei, using 7 years of data collected by DAMPE.

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