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First data from the DAMPE space mission

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The DAMPE (Dark Matter Particle Explorer) satellite was launched on December 17, 2015 and is in smooth data taking since few days after. It was designed in order to work properly for at least three years and, thanks to its large geometric factor ($\sim 0.3 \text{ m}^2 \text{ sr}$ for protons and nuclei), is integrating one of the largest exposures for galactic cosmic ray (CR) studies in space.

Even if primarily optimized to collect electrons and gammas, DAMPE provides good tracking, calorimetric and charge measurements also in case of protons and nuclei. This will allow precise measurement of CR spectra from tens of GeV up to about 100 TeV (the high limit is essentially determined by the overall geometric factor and the calorimeter dynamic range). In particular, the energy region between 1-100 TeV will be explored with higher precision compared to previous experiments: spectral indexes for individual species could then be well measured and the observed hardenings could be checked and better quantified. This would be very important for a comparison with present models of galactic CR acceleration/propagation mechanisms.

The various subdetectors allow an efficient identification of the electron signal over the large (mainly proton-induced) background. As a result, the all-electron spectrum will be measured with excellent resolution from few GeV up to few TeV, thus giving the possibility to identify possible contribution of nearby sources.

A report on the mission goals and status will be presented, together with in-orbit detector performance and first data coming from space.

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