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Machine learning methods for helium flux analysis with DAMPE experiment

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DAMPE is a space-borne experiment for the measurement of the cosmic- ray fluxes at energies up to around 100 TeV per nucleon. At energies above several tens of TeV, the electronics of DAMPE calorimeter would saturate, leaving certain bars with no energy recorded. It is also observed that at high energies the tracker and the scintillator detector that serve for the charge identification become heavily populated with back-splash tracks. Both effects interfere in precise measurements of the helium flux at highest energies. In the present contribution we discuss the application of machine learning techniques for the treatment of DAMPE data, to compensate the calorimeter energy lost by saturation and to identify helium events.

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