

Particle identification on the DAMPE experiment

Friday 1 March 2019 10:20 (20 minutes)

The Dark Matter Particle Explorer (DAMPE) is a space-borne particle detector and cosmic rays observatory in operations since 2015, equipped with alongside other instruments a deep calorimeter able to detect electrons up to an energy of 10 TeV and cosmic rays up to 100 TeV. The large proton and ion background in orbit requires a powerful electron identification method. We explore a neural network based approach to an on-orbit particle identification problem. We present the issues that arise from the constraints of particle physics and our experiment, notably the difference between training set based on simulated (Monte Carlo) data, and the application set based on real unlabeled data, leading to a trade-off between performances and general usability.

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Session Classification: Talk