Deep learning based event reconstruction for Limadou HEPD

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Executive Summary:

What is this contribution about?

This contribution focuses on the application of Deep Learning (DL) to the event reconstruction of the Limadou HEPD on board of the China Seismo-Electromagnetic Satellite.

Why is it relevant / interesting?

DL algorithms are gaining importance in the most modern particle experiments, since they automatically model and discover correlation among the detector signals, which are hidden or not easy to model.

What have we done?

We used a large GEANT4 simulation to train and test fully connected neural networks which reconstruct the kinetic energy, the arrival direction and the identity of incoming particles.

What is the result?

We designed a DL-based event reconstruction with good performance on 3-100 MeV electrons and 30-200 MeV protons, evaluated on simulated and test beam data.