Contribution ID: **118**   Type: **Oral Presentation**

Determination of CMS Barrel Test Beam Calorimeter Reponse Correction to Pion Beams with Convolutional Neural Networks

Wednesday 31 July 2019 17:00 (20 minutes)

We investigate modern machine learning techniques to derive calibration for the combined CMS electromagnetic and hadronic calorimeter system. We use the dataset from a 2006 CMS test beam to measure the calorimeter responses to pion beams of various energies. The performance of the network is evaluated by studying the linearity of calibrated responses. A convolutional neural network approach is used to train on a range of beam momenta from 2 to 200 GeV/c and to apply the correction to the energy distribution.

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Session Classification: Computing, Analysis Tools, & Data Handling

Track Classification: Computing, Analysis Tools, & Data Handling