

XXV International Baldin Seminar on High Energy Physics Problems
"Relativistic Nuclear Physics and Quantum Chromodynamics"



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Energy calibration of Forward Hadron Calorimeter at MPD with cosmic muons

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We discuss a few approaches in energy calibration of Forward Hadron Calorimeters (FHCAL) at MPD with cosmic muons. A few types of muon tracks in FHCAL modules were considered. The straightforward method is the selection of horizontal muons that are parallel to the longitudinal axis of calorimeter modules. In this case the energy deposition in each longitudinal sections of FHCAL module is about 5 MeV and equals to the energy loss of minimum ionizing particles (MIPs). This approach requires the data acquisition for a few days to collect a statistically reliable data. Therefore, another solution was tested based on muon track reconstruction for various entry angles. In this technique the length of muon track in each longitudinal section of FHCAL module was evaluated with the subsequent correction of energy deposition to this length.

This technique faces several problems connected to heterogeneous calorimeter structure which make the use of some muon entry angles unreliable. Calibration results for both approaches will be presented and compared.

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