Contribution ID: 397

Type: Oral

Development and Performance Evaluation of ECal Modules in China for the NICA-MPD

Tuesday 1 July 2025 18:40 (20 minutes)

The Electromagnetic Calorimeter (ECal), a critical sub-detector of Multi-Purpose Detector (MPD) at Nuclotronbased Ion Collider fAcility (NICA), is designed to identify and measure electrons, photons, and neutral hadrons produced in high-energy heavy-ion collisions. Its Shashlyk-type architecture combines lead absorbers and plastic scintillators in a layered geometry to optimize measurement precision.

Chinese MPD group has developed 768 ECal modules(one-third of the whole ECal). In this report, the mass production process of ECal modules and a performance test system designed for the mass production will be discussed. The uniformity of the ECal modules achieved based on cosmic ray test will be presented, indicating the mass produced ECal modules met the design requirements and the quality control in mass production is effective. Furthermore, I would give a larger emphasis to physics feasibility studies for neutral mesons with the ECal based on Bi+Bi@9.2GeV simulated using realistic event generators.

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Session Classification: 3. Modern methods and technologies of nuclear physics

Track Classification: Section 3. Modern methods and technologies of nuclear physics.