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Reconstruction and simulation of the performance of the MPD/ECal

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The main goal of NICA/MPD is to investigate the hot and dense baryonic matter in heavy-ion collisions over a wide range of atomic masses, from $Au + Au$ collisions at a center-of-mass energy of $\sqrt{s_{NN}} = 11GeV$ (for Au^{79+}) to proton-proton collisions with $\sqrt{s_{NN}} = 20GeV$. Electromagnetic calorimeter (ECal) is an important detector of the MPD to identify electrons, photons and measure their energy with high precision. The parameters of the ECal such as the multiplicity, energy spectrum, kinematics and PID information are simulated and analyzed.
π^0 signal can be reconstructed from two photons and it is a very important probe to give information of the chiral symmetry restoration and flow signal. The characteristics of the π^0 reconstruction such as the mass spectra, efficiency and $\theta_{\gamma\gamma}$ are analyzed. The angle deviation between the reconstructed and generated theta caused by the offset of the interacting point Z position in the projective geometry is corrected and applied to the π^0 reconstruction. As the overlap of the clusters, it is an important task to improve the reconstruction of the ECal signals, especially for high occupancy. Two different clusterize methods are took and compared in the performance of the reconstruction of γ and π^0.

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