

Electron identification with the electromagnetic calorimeter and its application for charmonia studies in the experiment ALICE3 at LHC

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ALICE3 is a next-generation heavy-ion experiment at the Large Hadron Collider, a successor of the ALICE experiment. It opens a high-precision domain of the strongly interacting matter studies. A set of measurements of the ALICE3 requires electron identification with high efficiency and purity, which will be performed by several complementing experimental techniques. Feasibility of electron identification using electromagnetic calorimeter clusters matched with tracks reconstructed in the central tracker is studied with the ALICE3 simulation and analysis framework. Electron identification criteria are optimized against efficiency and hadron contamination suppression, and applied to charmonium ($1P$) reconstruction in pp collisions via the $\chi_{cJ} \rightarrow J/\psi + \gamma$ decay channel. Feasibility to reconstruct the charmonium states in pp collisions at the ALICE3 is discussed.

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