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Feasibility studies of open charm production in future ALICE-3 experiment at LHC-HL

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Stage 3 of ALICE experiment considers construction of fully new detector based on the novel silicon technologies. New apparatus will widen area of studies of hot and dense QCD matter produced in relativistic heavy-ion collisions for ALICE collaboration. Besides this it will highly improve precision of already obtained results also giving opportunity for differential studies. And one of the goals of future ALICE-3 experiment is precise differential study of open charm production in wide range of transverse momentum. In this contribution, we present results of feasibility studies for the reconstruction of D-mesons excited states in the decay channels with neutral photons or mesons detected in the large acceptance electromagnetic calorimeter of future ALICE-3 experiment at LHC-HL. Effect of merged clusters in electromagnetic calorimeter is discussed and estimations of reconstructed efficiency, signal to background ratio and required for precise measurements statistics of heavy ions collisions are presented.

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