

5th International workshop on heavy quark production in heavy-ion collisions



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Feasibility of the detection of D0 mesons in the NA61/SHINE experiment at the CERN SPS

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A feasibility study of D0 meson (Open charm) measurements by its decay into two daughter particles, $D0 \rightarrow K^+ \pi^-$, in central Pb+Pb collisions at the CERN SPS energies will be presented.

The study for the NA61/SHINE experimental setup supplemented with a future vertex detector that will allow for a precise track and vertex reconstruction at the target proximity. In order to generate the physical input we use the AMPT (A MultiPhase Transport model) event generator with multiplicities of D0 and D0bar mesons scaled to the multiplicities predicted by the HSD model. We employed the GEANT4

application to describe particle transport through the experimental setup.

The presentation will discuss obtained results focusing on the predicted experimental yields of D0 mesons and comparing different analysis strategies. It will also address the issue of the vertex detector optimization regarding its geometry and applied detection technologies.

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