Contribution ID : **90**   Type : **poster**

Open charm measurements at CERN SPS energies with the new Vertex Detector of the NA61/SHINE experiment

Saturday, 9 June 2018 14:30 (1:30)

Collaboration

NA61/SHINE

Abstract content

The study of open charm meson production provides an efficient tool for detailed investigations of the properties of hot and dense matter formed in nucleus-nucleus collisions. The interpretation of the existing data from the CERN SPS suffers from a lack of knowledge on the total charm production rate. To overcome this limitation the heavy-ion programme of the NA61/SHINE experiment at CERN SPS has been expanded to allow for precise measurements of particles with a short lifetime. A new Vertex Detector, based on the MIMOSA pixel chip family, was designed and constructed to meet the challenges of open charm measurements in nucleus-nucleus collisions.

A small-acceptance version of the Vertex Detector, SAVD (Small Acceptance Vertex Detector), was installed in December 2016 for data taking with Pb+Pb collisions at 150A GeV/c. An exploratory set of collected data allowed to validate the general concept of the D0 mesons detection via its $D_0 \rightarrow \pi + K$ decay channel and delivered the first indication of open charm observation at SPS energies. In October and November of 2017 a large statistic data set has been taken for Xe+La at the beam momenta of 150A, 75A, and 40A GeV/c, these data are currently under intense analysis. The physics motivation behind the open charm measurements at the SPS energies will be discussed. Moreover, the concept of the SAVD hardware and status of the analysis will be shown, discussing challenges related to the tracking in the inhomogeneous magnetic field, as well as the matching of SAVD tracks to TPCs tracks needed for the extraction of physics results. Also, the future plans of open charm measurements in NA61/SHINE experiment related to the upgraded version of the Vertex Detector will be presented.

Primary author(s) :   MERZLAYA, Anastasia (Jagiellonian University (PL), St Petersburg State University (RU),)

Presenter(s) :   MERZLAYA, Anastasia (Jagiellonian University (PL), St Petersburg State University (RU),)

Session Classification :   Poster Session