Contribution ID: **178**   Type: **Poster**

Past, present and future of open charm measurements at the CERN SPS energies

Tuesday 11 June 2019 18:45 (2 hours)

The study of open charm meson production provides an important tool for detailed investigations of the properties of hot and dense matter formed in nucleus-nucleus collisions. In particular, charm meson data is of vivid interest in the context of the phase-transition between confined hadronic matter and the quark-gluon plasma as well as it is needed for interpretation of data on J/ψ production.

The first estimate of the upper limit of mean multiplicity of D and $\bar{D}$ mesons by a direct measurement was done by the NA49 experiment in Pb+Pb collisions at the top SPS energies. The NA38/NA50 and NA60 experiments measured precisely charmonia production at the top SPS energies, i.e. 158A GeV/c corresponding to $\sqrt{s_{NN}}$ = 17.3 GeV for Pb+Pb, via measurements of dimuon production. Moreover, an indirect estimate of open charm was provided.

The first direct observation of D^0 signal via it's $D^0 \rightarrow \pi^+ + K^-$ decay channel was done recently by the NA61/SHINE experiment in Pb+Pb collisions at 150A GeV/c in 2016 with new Vertex Detector setup. The NA61/SHINE physics data taking on open charm production in Xe+La and Pb+Pb collisions at 150A GeV/c was conducted in 2017 and 2018.

NA61/SHINE plans a systematic measurements of open charm production in Pb+Pb collisions in the period 2021-2024 after the major detector upgrade conducted during the Long Shutdown 2. The results will be significantly extended by measurements by future experiments at the new facilities –CBM at FAIR, Germany, MPD at NICA, Russia and J-PARC-HI, Japan.

Collaboration name

Track

Heavy Flavour

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

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

Session Classification: Poster session with "aperitivo"