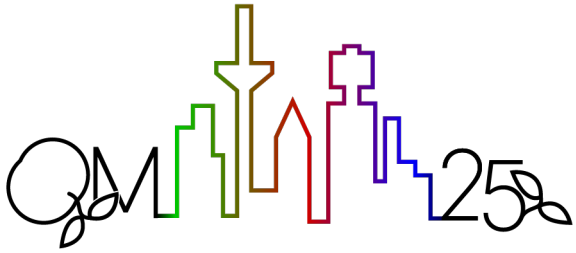

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First open charm measurement in heavy ion collisions at SPS energies with NA61/SHINE

The measurement of open charm production is considered as an important tool for investigating the properties of hot and dense matter formed in relativistic nucleus-nucleus collisions and will allow for a model-independent interpretation of existing data [1].

The formation of hadrons containing charm quarks is particularly sensitive to quark-gluon plasma (QGP) creation. The NA61/SHINE experiment at the Super Proton Synchrotron (SPS) has been upgraded with a high-spatial-resolution Vertex Detector (VD) [2]. This upgrade was motivated by the importance and the possibility of the first direct measurements of open charm mesons in heavy ion collisions at the SPS energies.

Large statistic data were collected for Xe+La collision at the beam momentum of 150 A GeV/c. Minimum bias and 0-20% centrality online trigger selection were applied. The D^0 and $\overline{D}^0$ mesons were reconstructed through their hadronic decay channels ($D/\overline{D}^0 \rightarrow K^{-/+} + \pi^{+/-}$).

In my talk, I will briefly discuss the physics motivations for open charm measurements and focus on the results of charm meson production in the 0-20% most central Xe+La collisions at 150 A GeV/c. The presented results will cover the $D^0 + \overline{D}^0$ 4π multiplicities, compared with various model calculations, including statistical and dynamical approaches.

References

[1] H. Satz, *Adv. High Energy Phys.*, 2013 (2013) 242918.

[2] A. Aduszkiewicz et al., *Eur. Phys. J. C*, 83 (2023) 471.

Category

Experiment

Collaboration (if applicable)

NA61/SINE

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