



Contribution ID: 461

Type: Poster

A new large acceptance silicon pixel detector for measurements of heavy flavour by NA61 Beyond 2020

Tuesday 15 May 2018 19:10 (30 minutes)

The NA61/SHINE experiment at the CERN SPS experiment is planning to upgrade the detector and extend the heavy-ion programme after 2020 to allow precise measurements of particles with short lifetime (charmed particles in particular).

The study of heavy flavour production is a sensitive tool for new detailed investigations of the properties of hot and dense matter formed in nucleus-nucleus collisions. In particular, it offers new possibilities for studies of such phenomena as in-medium parton energy loss and quarkonium dissociation and possible regeneration, thus providing new information to probe deconfinement. Recently a silicon Small-Acceptance Vertex Detector was installed to measure production of open charm mesons. It is planned to significantly expand the vertex detector with more sensors both in longitudinal and transverse directions, as well as the increase by an order of magnitude the read-out rate. In addition to improve measurements of open charm particles, the larger size will also significantly increase the capabilities to reconstruct the secondary vertices of relatively long-lived (multi strange) particles that decay inside the detector.

The physics motivation as well as the proposed detector layout simulations and hardware implementation will be discussed.

Content type

Experiment

Collaboration

NA61/SHINE

Centralised submission by Collaboration

Presenter name already specified

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Session Classification: Poster Session

Track Classification: Future facilities, upgrades and instrumentation