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Prospects for open heavy-flavour and quarkonium measurements with NA60+

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The NA60+ experiment, proposed for data taking in the next years, aims to investigate the high baryochemical potential region of the QCD phase space diagram, exploiting the large intensity of CERN SPS beams.

NA60+ will have the possibility to access the high μ_B region of the QCD phase diagram, by studying rare probes via a beam-energy scan with PbPb and p-A collisions in the interval $6.3 < \sqrt{s_{NN}} < 17.3$ GeV.

In this talk, we will focus on the prospects for measurements of hidden and open charm. Open charms will be measured in their decays into charged hadrons, reconstructed from tracks in the silicon detectors of the vertex telescope.

High-precision measurements of the yield of D^0 , D^+ and D_s^+ mesons, and of Λ_c^+ baryons, will allow us to constrain the transport properties of the QGP and the charm-quark hadronisation.

Charmonium states will be accessed from their dimuon decay, reconstructed by matching muon tracks in the vertex telescope and in the muon spectrometer. The J/ψ and $\psi(2S)$ measurements at various collision energies will allow us to identify the onset of charmonium suppression in a deconfined medium, correlating this observation with the temperature of the system, as measured, always by NA60+, via thermal dimuons.

The competitiveness and complementarity of NA60+ in the landscape of the experiments foreseen at other facilities in the next decade will also be discussed.

Category

Experiment

Collaboration (if applicable)

NA60+ Collaboration

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