

Open heavy-flavour and quarkonium measurements with the forthcoming NA60+ experiment

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The NA60+ experiment, proposed for data taking from 2029, aims at studying the high μ_B region of the QCD phase space diagram. It will make use of the high intensity of CERN SPS beams, and detect rare probes via a beam-energy scan with Pb-Pb 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 charm hadrons will be detected through their hadronic decays, reconstructing 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 features of heavy-quark hadronisation.

Charmonium states will be accessed through their dimuon decay, matching muon tracks reconstructed 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, measured in the same experiment via thermal dimuons.

Finally, we will discuss the competitiveness and complementarity of NA60+ in the landscape of the experiments foreseen at other facilities in the next decade.

Category

Experiment

Collaboration

NA60+ collaboration

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