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Overview on quarkonia and heavy-flavor physics at the LHC

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The production of quarkonia and open heavy-flavor hadrons in relativistic heavy-ion collisions has been widely explored by all LHC experiments and represents a valuable tool for probing the properties of the quark-gluon plasma (QGP). In fact, since heavy quarks, charm and beauty, are produced during the hard parton-parton scattering, they experience the entire evolution of the fireball. On one side, the suppression of quarkonium bound states by the QGP, as well as the charmonium regeneration by (re)combination of charm quarks in a strongly interacting medium, are sensitive to the medium properties. On the other, the measurement of open heavy-flavor hadron production can provide us important information on the heavy quarks' energy loss and hadronization mechanism. Moreover, the measurement of the azimuthal anisotropy coefficients (v_2 , v_3) for different hadron species allows to assess the collective behavior of heavy quarks in an expanding medium.\

In this contribution, recent quarkonium and heavy flavor measurements in nucleus-nucleus collisions obtained at the LHC. In particular, the nuclear modification factor for various hadrons and particle species ratios will be shown as a function of transverse momentum, centrality and multiplicity. The latest measurements of flow coefficients for quarkonia and heavy-flavor hadrons will be also presented.

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