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Quarkonium and open heavy-flavor production in Pb-Pb and p-Pb collisions with ALICE at the LHC (15' + 5')

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According to lattice QCD calculations, the hot and dense fireball created in relativistic heavy-ion collisions undergoes a phase transition to a relatively long lived deconfined state, named Quark-Gluon Plasma (QGP), which allows the study of QCD in a new regime with respect to pp or elementary particle collisions. Heavy quarks constitute an important probe for QGP studies since they are created during the pre-QGP stage of the collision, with a relatively well known cross section, and their number is conserved throughout the collision history. The way they are affected while traversing the medium, e.g. energy loss, collective motion, provides important information on the QGP properties. Heavy quarkonium particles, strongly bound states consisting of a heavy quark-anti-quark pair ($Q\bar{Q}$), are predicted to melt in the QGP due to color screening, an effect analogous to the Debye screening in QED. However, at high enough heavy-quark densities, it becomes probable to recreate quarkonium states either during the QGP phase or at the system freeze-out.

We will present an overview of the ALICE measurements on quarkonium and open heavy-flavor production in Pb-Pb collisions at $\sqrt{s_{NN}} = \sim 2.76$ and 5.02 TeV and in p-Pb collisions at $\sqrt{s_{NN}} = \sim 5.02$ TeV. The focus of the talk will be on the Run-2 Pb-Pb and latest Run-1 p-Pb results. The theoretical understanding of the presented data will be discussed using recent model calculations.

Primary author: ARSENE, Ionut Cristian (University of Oslo (NO))

Presenter: ARSENE, Ionut Cristian (University of Oslo (NO))

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