

Contribution submission to the conference DPG 2021

Soft dielectron production in pp and Pb–Pb collisions with ALICE — ●JEROME JUNG for the ALICE-Collaboration — Institut für Kernphysik, Goethe-Universität Frankfurt

The production of soft dielectrons is an exceptional and versatile tool to study the underlying mechanisms and properties of hadron-hadron and heavy-ion collisions (HIC). In HIC, the STAR collaboration observed first a clear excess of dielectrons produced at low pair momenta which exceeded the hadronic decay background. These soft dielectrons can be attributed to coherent photoproduction originating in the interaction of the highly contracted electromagnetic fields of the colliding ions, a sole QED process. In hadronic collisions, several experiments observed an excess at low momenta for real as well as virtual photons beyond hadronic decays which could not be explained by initial- and final-state bremsstrahlung either. As this soft-photon puzzle is absent in purely leptonic collisions, the origin of the effect seems to be connected to QCD.

In this talk, ALICE measurements of dielectron production in pp and (semi-) peripheral Pb–Pb collisions, will be presented. The pp collisions are recorded with a reduced magnetic field of the central barrel solenoid of 0.2 T. This enables the investigation of a kinematic domain at low invariant mass m_{ee} and pair transverse momentum $p_{T,ee}$, which was previously inaccessible at the LHC. Comparison of the measured dielectron yield to the hadronic decay cocktail indicates a clear enhancement of soft dielectrons in both systems. Finally, the excess spectra are extracted and compared to theoretical model calculations.

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