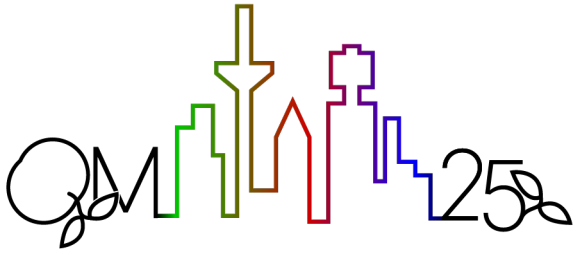

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Direct photon production from small to large collision systems with ALICE

Wednesday 9 April 2025 11:10 (20 minutes)

Electromagnetic probes are a unique tool for studying the space-time evolution of the hot and dense matter created in ultra-relativistic heavy-ion collisions. Photons and dielectron pairs are emitted during the entire evolution of the medium created in such collisions, providing access to direct-photon production that includes thermal radiation from the early hot stages of the collision. The measurement of direct photons in minimum-bias pp collisions serves as a crucial baseline for the studies in heavy-ion collisions, whereas pp collisions with high charged-particle multiplicities allow the search for interesting phenomena such as the possible presence of QGP in small systems.

This talk will present the final LHC Run 2 ALICE results on the direct-photon production in pp and Pb–Pb collisions. In central Pb–Pb collisions at $\sqrt{s_{\mathrm{NN}}}$ = 5.02 TeV, results from virtual and real direct photons, as well as direct photon Bose-Einstein correlations are shown, enabling a precise direct photon spectrum over a broad range of transverse momentum. To study the possible onset of the formation of a hot medium, we also report the results on the direct-photon production in pp collisions at $\sqrt{s}$ = 13 TeV as a function of charged-particle multiplicity. The results are compared to theoretical models that include a contribution from a thermalised source.

Category

Experiment

Collaboration (if applicable)

ALICE

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