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Type: **Poster**

Direct photon production and correlation at low p_T in Pb–Pb collisions with ALICE

Direct photon measurements provide essential insights into the properties and evolution of the quark-gluon plasma (QGP), from the early initial conditions through the pre-equilibrium stage to the QGP and hadronic phases. In the ALICE experiment, photons are reconstructed using two complementary methods: the photon conversion method, making use of the excellent tracking capabilities of ALICE, and the use of one of the two calorimeters. These techniques enable photon detection across a broad transverse momentum range from 0.4 GeV/c, where thermal photons dominate, to several GeV/c, where prompt photon production becomes significant.

This talk will present measurements of direct photon production across different centrality classes in Pb–Pb collisions at $\sqrt{s_{NN}} = 2.76$ and 5.02 TeV. Additionally, we will show the first significant results on direct-photon HBT correlations at low momentum, extending the direct photon measurement down to $p_T = 0.25$ GeV/c and offering new insights into the space-time evolution of the emitting source. Finally, preliminary results from photon reconstruction in LHC Run 3 data will also be discussed.

Category

Experiment

Collaboration (if applicable)

ALICE

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