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Exploring hot QCD matter via direct photons at ALICE

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Measurements of direct photon production in heavy-ion collisions provide a unique tool to test proton structure and properties of the hot QCD medium. Unlike hadrons, direct photons are produced in all stages of a nucleus-nucleus collision and escape freely from the hot zone. Prompt direct photons can be emitted in pp, p-Pb and Pb-Pb collisions and provide means to test the initial stage of AA collision. The spectrum and collective flow of thermal direct photons carry information about the temperature and space-time evolution of the emitting medium.

The ALICE experiment at LHC reconstructs photons via complementary methods, using the ALICE electromagnetic calorimeters and the central tracking system identifying photons converted to e+e- pairs in the material of the inner barrel detectors. Applying different techniques, one can measure photons in a wide range of transverse momenta. In addition, since calorimetric and tracking approaches have practically independent systematic uncertainties, their comparison provides a reliable cross-check. In this talk we review recent ALICE results on direct photon production in pp, pA and AA collisions and compare to available data at SPS and RHIC energies.

Primary author(s) : Dr. PERESUNKO, Dmitri (Kurchatov Institute); COLLABORATION, ALICE

Presenter(s) : Dr. PERESUNKO, Dmitri (Kurchatov Institute)

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