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Direct photon measurements in different collision systems with the ALICE experiment at the LHC

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Direct photon measurement in heavy-ion collisions provides a valuable set of observables to study the hot QCD medium since these photons are produced at different stages of the collision and escape the medium unaffected. In proton-proton collisions, the direct photon yield at high transverse momentum (p_T) is fed by hard scattering processes (prompt photons) but also fragmentation of high- p_T partons. Their measurement allows one to test pQCD calculations and can constrain parton distribution functions. The access to the prompt photon production can be achieved experimentally with isolation techniques.

In heavy-ion collisions (e.g., proton-lead and lead-lead), the high- p_T component provides information on the initial parton dynamics and parton densities in nuclei, whereas the low- p_T component (below 3 GeV/c) of the direct photon production could be dominated by thermal radiation from the hot and dense matter formed, carrying information on its space-time evolution and temperature. The study of isolated photons and their correlations (with hadrons and jets) is also a very promising observable to study the medium-induced parton energy loss in hadron collisions.

In this talk, we will present the latest ALICE results on direct (isolated) photons and their correlations in different collision systems.

Choix de session parallèle

1.3 Physique nucléaire: physique hadronique et QCD

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