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Isolated photon-hadron and π^0-hadron correlations in pp and Pb-Pb collisions with the ALICE experiment

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Correlations between high-p_T photons or leading hadrons and charged hadrons are considered as a sensitive probe for studying medium-induced parton energy loss and jet modification in heavy-ion collisions. The prompt photons are produced in association with jets in pp and Pb-Pb collisions. Such processes can be tagged experimentally via photon isolation analysis and the correlation of such photons with hadrons in the opposite side in azimuth. Prompt photons energy is close to the energy of the parton at the origin of the jet in the opposite side and thus the correlation with the hadrons allows a measurement of the jet fragmentation.

Neutral mesons production at high p_T is also modified in Pb-Pb collisions due to the same parton energy loss mechanism. In addition, the jet fragments in the meson direction, and the opposite jet in azimuth, are also quenched in the medium. Therefore, the charged particles yield associated with the high-p_T neutral meson is modified in Pb-Pb collisions compared to the pp reference at the same colliding energy.

The ALICE experiment at the LHC performs measurements of the azimuthal correlation between neutral pions or isolated photons triggered by the electromagnetic calorimeter EMCAL, and charged hadrons detected in the central tracker. Results of π^0-hadron correlations measurements in pp and Pb-Pb collisions at $\sqrt{s_{NN}}$ = 2.76 TeV as well as jet fragmentation tagged by isolated photons in pp collisions at $\sqrt{s}$ = 7 TeV, will be presented.

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