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Two-particle correlations between neutral pions and charged hadrons in pp and Pb-Pb collisions with ALICE at the LHC

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The LHC heavy-ion physics program aims at investigating the properties of strongly-interacting matter in extreme conditions of temperature and energy density, where the formation of the Quark Gluon Plasma (QGP) is expected. Azimuthal angular correlations between two particles provide a powerful tool to study medium-induced parton energy loss and jet modification in heavy-ion collisions. Neutral mesons production at high-pT is modified in Pb-Pb collisions due to the parton energy loss mechanism. Jet in trigger meson direction and opposite jet in azimuth are also quenched in the medium. Therefore, the charged particles yield associated with the high-pT neutral meson is modified in Pb-Pb collisions compared to the pp reference at the same colliding energy.

ALICE, the only detector designed and optimized for heavy-ion physics at the LHC, measures the azimuthal angular correlations between neutral pions measured through the ElectroMagnetic Calorimeter (EMCAL) located at central rapidity ($-0.7 < y < 0.7$) and charged hadrons detected in the central tracking system. Azimuthal angular correlation distributions and jet yield modification measured by the $\frac{1}{40}$ -hadron correlations in pp and Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV will be presented in the talk.

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