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D meson-hadron angular correlations in pp and p-Pb collisions with ALICE at the LHC

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Fabio Filippo Colamaria, for the ALICE Collaboration

ALICE measured a significant suppression of D-meson production in a wide momentum range in central Pb-Pb collisions with respect to the expectation based on the cross section measured in pp collisions, scaled by the number of nucleon-nucleon collisions. This effect can be, at least partially, attributed to the energy loss by charm quarks through the interaction with the Quark Gluon Plasma formed in such collisions. The comparison of angular correlations between charmed mesons and charged hadrons produced in pp, p-Pb and Pb-Pb collisions can give insight into the mechanisms through which charm quarks lose energy and help to spot possible modifications of their hadronisation induced by the presence of the medium. The analysis of pp and p-Pb data and the comparison with predictions from pQCD calculations, besides constituting the necessary baseline for the interpretation of Pb-Pb data, can provide relevant information on charm production and fragmentation processes.

We will present a study of azimuthal correlations between D0, D+, and D* mesons and charged hadrons in pp collisions at $\sqrt{s} = 7$ TeV and p-Pb collisions at $\sqrt{s} = 5.02$ TeV. D mesons were reconstructed from their hadronic decays at central rapidity and in the transverse momentum range $2 \leq p_T \leq 16$ GeV/c and were correlated to charged hadrons reconstructed in the pseudorapidity range $|\eta| < 0.8$. Perspectives for the measurement in Pb-Pb collisions at $\sqrt{s} = 2.76$ TeV will be also discussed.

Primary author: COLAMARIA, Fabio Filippo (Universita e INFN (IT))

Presenter: COLAMARIA, Fabio Filippo (Universita e INFN (IT))

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