Contribution ID: **803** Type: **Talk**

Isolated photon production and pion-photon correlations in high-energy pp and pA collisions

Tuesday 28 July 2020 20:45 (15 minutes)

A phenomenological study of the isolated photon production in high energy *pp* and *pA* collisions at RHIC and LHC energies is performed. Using the color dipole approach we investigate the productioncross section differential in the transverse momentum of the photon considering three different phenomenological models for the universal dipole cross section. We also present the predictions for the rapidity dependence of the ratio of *pA/pp* cross sections. As a further test of the formalism, for different energies and photon rapidites we analyse the correlation function in azimuthal angle $\Delta\varphi$ between the photon and a forward pion. The characteristic double-peak structure of the correlation function around $\Delta\varphi = \pi$ observed previously for Drell-Yan pair production is found for isolated photon emitted into the forward rapidity region which can be tested by future experiments.

Secondary track (number)

07

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Session Classification: Strong Interactions and Hadron Physics

Track Classification: 06. Strong Interactions and Hadron Physics