Survey of high p_T π^o and photon yield predictions for PHOS/ALICE spectrometer

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Abstract

The ALICE photon and neutral meson spectrometer PHOS plays a key role to pinpoint the existence of the quark-gluon plasma through, e.g. the observation of the high p_T particles ($p_T > 10$ GeV/c) and the predicted modification of their spectrum. High p_T partons created in early hard processes will traverse the subsequently dense and equilibrated partonic matter if it lives long enough.The observervation of such jet quenching requires, in particular, to detect π^o in ALICE with momenta as high as 30 GeV/c. Extrapolating the UA1 and CDF data, and relying on theoretical QCD based calculations were our main tools to investigate the high p_T experimental sensitivity of PHOS. Hagedorn type distributions were used to simulate the high p_T tail of $4\pi^o$ spectra and its subsequent γ generated spectrum. Our hopeful predictions will be presented, even the possibilities to tag jets with photons.

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