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New probes of nuclear gluon dynamics through photoproduction of charm in inelastic ultra-peripheral Pb–Pb collisions with ALICE

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In an ultra-peripheral collision, where the impact parameter is larger than the sum of the nuclear radii, the nuclei mainly interact electromagnetically. These reactions are mediated by virtual photons. A photon can interact with a gluon in the target nucleus and produce a pair of charm quarks. These charm quarks then fragment and are observed as open charm hadrons (D^0 , D^* (2010) $^\pm$ etc.) or vector mesons (J/ψ and $\psi(2S)$). This process has been used in e-p collisions to set stringent limits on the proton gluon distribution at low- x . The current measurements can provide similar constraints on the much less known nuclear gluon distributions. The cross sections and transverse momentum distributions for D mesons and J/ψ measured in ALICE will be presented. The results will be compared with model calculations.

Category

Experiment

Collaboration (if applicable)

ALICE

Authors: COLLABORATION, ALICE; NESE, Sigurd (University of Oslo (NO))

Presenter: NESE, Sigurd (University of Oslo (NO))

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