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Measurement of dijet production in UPC with the ATLAS detector

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In relativistic heavy ion collisions, the charged ions produce an intense flux of equivalent photons. Thus, photon-induced processes are the dominant interaction mechanism when the colliding nuclei have a transverse separation larger than the nuclear diameter. In these ultra-peripheral collisions (UPCs), the photon provides a clean, energetic probe of the partonic structure of the nucleus, analogous to deep inelastic scattering. This talk presents a measurement of jet production in UPCs performed with the ATLAS detector using high-statistics 2018 Pb+Pb data. Events are selected using requirements on jet production, rapidity gaps, and forward neutron emission to identify photo-nuclear hard-scattering processes. The precision of these measurements is augmented by studies of nuclear break-up effects, allowing for detailed comparisons with theoretical models in phase-space regions where significant nuclear PDF modifications are expected but not strongly constrained by existing data.

Category

Experiment

Collaboration (if applicable)

ATLAS Collaboration

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