



Contribution ID: 449

Type: Oral

## Measurement of dijet production, strange particle production, and bulk properties in photonuclear collisions with ATLAS

*Tuesday 8 April 2025 09:40 (20 minutes)*

In ultra-relativistic heavy ion collisions, the charged ions produce an intense flux of equivalent photons. Photon-induced processes are the dominant interaction mechanism when the colliding nuclei have an impact parameter 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 inclusive photo-nuclear hard-scattering processes. These measurements also include detailed studies of rapidity gap distributions and nuclear break-up effects, allowing for precise comparisons between data and theory for inclusive photo-nuclear processes. The measured cross-sections are compared to theoretical models in phase-space regions where significant nuclear PDF modifications are expected but not well constrained by world data, demonstrating the potential of these data to provide a strong new constraint on nPDF effects.

### Category

Experiment

### Collaboration (if applicable)

ATLAS Collaboration

**Author:** GILBERT, Benjamin Jacob (Lawrence Livermore Nat. Laboratory (US))

**Presenter:** GILBERT, Benjamin Jacob (Lawrence Livermore Nat. Laboratory (US))

**Session Classification:** Parallel session 15

**Track Classification:** Physics of ultraperipheral collisions