

## Ultraperipheral collisions with the ATLAS detector

*Wednesday, 25 May 2016 14:00 (20 minutes)*

(speaker known later)

The large equivalent-photon fluxes accompanying Pb ion beams at the LHC initiate photon-photon and photonuclear interactions which dominate when the colliding nuclei have large impact parameter (ultra-peripheral collisions). These electromagnetically-induced processes are sensitive to the nuclear wave-function and in particular the nuclear modifications of the nucleon parton distribution functions (nPDFs). As such, they are complementary to the ongoing p+A program at RHIC and the LHC, as well as the upcoming electron-ion collider in the US. The absolute rates of single and multiple neutron emission into one or both ZDCs will be presented, to test theoretical predictions for the photon flux as well as nuclear absorption. The rates for exclusive vector meson production ( $\rho$  and  $J/\psi$ ) will be studied to probe effects related to the nuclear wave function, and the high-mass dilepton pair continuum rates will also be studied to further test expectations for two-photon interactions. Finally, first measurements of jet production in photonuclear interactions will also be presented to gain insight into the nuclear wave function in a previously unexplored range of  $x$  and  $Q^2$ .

### Collaboration

ATLAS

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