

# UPC 2023: International workshop on the physics of Ultra Peripheral Collisions

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## Novel aspects of particle production in UPCs

*Friday 15 December 2023 10:00 (30 minutes)*

In this talk I will address two topics. First I will discuss the production of pions at very large rapidities ( $y > 7$ ) in p-Pb and Pb-Pb collisions at the LHC. These pions are produced through the magnetic excitation of nucleons in the target due to the strong magnetic field generated by the projectile, i.e.,  $N \rightarrow \Delta \rightarrow N' \pi$ . This process has a very large cross section and can be used to measure the magnetic field produced by the projectile. The details of the calculations were published in Phys.Lett.B 805 (2020) 135463 (arXiv:1910.00711) and Phys.Rev.C 103 (2021) 2, 024902 (arXiv:2011.00726). I plan to report on new developments and improvements. Second, I will briefly review the works (especially arXiv: 2307.12387) on the production of exotic charmonium in UPCs and then present the calculation of the production cross section of a D-Dbar molecular state in photon-photon collisions in UPCs. This calculation involves the use of an effective Lagrangian to produce the pair of charm mesons and a prescription to bind them together forming the bound state. This is work in progress and will be concluded by the end of this year.

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