



Contribution ID: 184

Type: not specified

## Results and future prospects of ultra-peripheral heavy-ion collisions with CMS

*Monday, 15 September 2014 15:55 (25 minutes)*

Ultra-peripheral collisions (UPCs) of heavy ions involve long range electromagnetic interactions at impact parameters larger than twice the nuclear radius. At TeV energies, the strong electromagnetic field due to the coherent action of the  $Z=82$  proton charges generates a large flux of photons, which can be used for high-energy photoproduction studies. Heavy vector mesons (for example  $J/\psi$ ,  $\Psi'$ , Upsilon) produced in electromagnetic interactions provide direct information on the parton distribution functions in the nucleus at very low values of Bjorken- $x$ . These events are characterized by a very low hadron multiplicity. The wide pseudorapidity coverage of the CMS detectors is used to separate such events from very peripheral nuclear interactions. The CMS experiment has excellent capabilities for the measurement of the heavy vector mesons in the dimuon decay channel using the tracker and the muon chambers. This analysis demonstrates CMS's capabilities for measuring  $J/\psi$  and the two-photon process in ultra-peripheral collisions, using the 2011 PbPb and 2013 pPb data. The prospects for future measurements using the data to be collected in the 2015 PbPb run will be described.

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**Session Classification:** Diffraction in Nuclear Physics (II)

**Track Classification:** Diffraction in nuclear physics