

# Photon nuclear flux and toponium search at the LHC

## Content

Hadron and nuclear photon flux models, particle productions in photon-proton processes and particle correlations, toponium models and their phenomenology, spin correlations and  $t\bar{t}$  background rejection

## Summary

In this talk photon fluxes associated with light and heavy ions that are relevant in ultraperipheral pA collisions at the LHC are discussed, in particular the comparison between wood saxon and hard sphere models within superchic and pythia generators. Flux effect on particle production, rapidity gaps and two-particle correlations in gamma-proton interactions within pA systems is discussed. Additionally the observation of a resonance in the  $t\bar{t}$  spectrum at  $\sim 344$  GeV is revisited by analyzing the toponium models expectations for spin correlations and neural network based strategies to suppress the  $t\bar{t}$  background.

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