

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

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The STARlight Monte Carlo

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The STARlight Monte Carlo calculates cross sections and generates events for a variety of ultra-peripheral collisions. In particular two-photon production of dilepton pairs and single mesons, and photonuclear production of vector mesons. The collision geometry plays a major role in these interactions, and the photon spectrum is thus calculated in impact parameter space. The photonuclear vector meson cross section is calculated from a Glauber model. STARlight is also interfaced to DPMJET, through which general photonuclear interactions, $\gamma+A \rightarrow X$, can be simulated.

The major development of STARlight was performed some time ago, and it has since remained relatively stable. It has sometimes been referred to as an “industry standard” for ultra-peripheral collisions. Some new features have, however, been added recently, for example the decay mode $J/\psi \rightarrow p+pbar$, updated branching ratios have been implemented, and the modelling of light-nuclei has been improved. This talk will present the main ingredients of STARlight and compare it to some other models for ultra-peripheral collisions which have recently come on the market.

Primary author: NYSTRAND, Joakim (University of Bergen (NO))

Presenter: NYSTRAND, Joakim (University of Bergen (NO))

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