

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

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Collision geometry in UPC dijet production

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Inclusive dijet photoproduction in ultraperipheral nucleus-nucleus collisions (UPCs) has been promoted as a probe of nuclear parton distribution functions (nPDFs). However, due to the requirement of no nuclear overlap in such events, the impact parameter space is restricted. This becomes important in dijet production, where the requirement of having high- p_T jets means that one has to have energetic enough photon in the initial state, more likely to originate from close the source nucleus. We show that a significant portion of the measured dijets at large measurable z_γ (correspondingly small x_A) in UPC PbPb collisions at 5.02 TeV come from events with relatively small impact parameters of the order of few nuclear radii, and the cross section predictions therefore become sensitive to the modelling of the nuclear geometry and photon flux close to the source nucleus. We comment on the implications of these geometrical effects for the use of UPC dijets as a constraint of nPDFs.

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