

Tale of coherent photon products: from UPC to HHIC

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The coherent photon-nucleus and photon-photon interactions has been studied in detail to probe the gluon distribution in nucleus and to test QED via relativistic heavy-ion collisions. These kind of interactions are traditionally thought to be only exist in ultra-peripheral collisions (UPC), where there is no hadronic interactions. Recently, significant excess of J/ψ yield and dielectron pair production at very low transverse momentum ($p_T < 0.3$ GeV/c) were observed by the ALICE and STAR collaborations in peripheral A+A collisions, which points to evidence of coherent photon products in hadronic heavy-ion collisions (HHIC). The possible survival of photoproduced J/ψ and electron pair merits theoretical investigations, which are currently rare on the market.

In this talk, we report on calculations of J/ψ yield from coherent photon-nucleus interactions and dilepton production from photon-photon interactions in HHIC at RHIC and LHC energies. The model used to calculate the cross section is discussed and the expected yield are compared with experimental results from RHIC and LHC. We predict the coherent production contribution of J/ψ and dielectron from isobaric collisions (Ru+Ru, Zr+Zr) for the further experimental test at RHIC.

Type

Parallel talk

Sessions (parallel only)

Heavy Ions

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