ID de Contribution: **36** Type: **Seminar**

Photon induced processes from semi-central to ultraperipheral heavy-ion collisions

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Ultrarelativistic heavy ions are accompanied by a large flux of quasi-real Weizsäcker-Williams photons. This opens a broad range of research possibilities, as the Weizsäcker-Williams photons can be used to study photon-photon fusion reactions as well as photonuclear reactions in a wide range of energies, see for example the review [1].

Of special interest here are diffractive photoproduction reactions, which appear in two major classes: the coherent diffraction in which the target nucleus stays intact and the incoherent (or quasielastic) diffraction in which the nucleus breaks up, but no additional particles are produced in the nuclear fragmentation region.

We will discuss the coherent and incoherent diffractive photoproduction of heavy vector mesons J/ψ and Y based on our recent papers [2, 3]. Good agreement with available experimental data by the ALICE and LHCb collaborations can be obtained within a color-dipole approach. Diffractive photoproduction of heavy-flavour vector mesons has long been discussed as a probe of the target's gluon distribution, and we will discuss implications for the nuclear glue. Here additional nuclear shadowing from the cc̄g-Fock state is needed to obtain agreement with data.

Very recently, the role of Weizsäcker-Williams photons in peripheral, inelastic, heavy ion collisions has come under scrutiny. Recent measurements of dilepton production of the STAR collaboration in √sN N =200 GeV Au-Au collisions indicate an excess at small pair pT most notably in peripheral collisions. We show, that it can be that has attributed to the initial photon fusion which is most significant at small pair transverse momenta [4]. The centrality dependence of the pair transverse momentum distribution is calculated in a novel factorization approach involving Wigner distributions
of photons [5].

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Author: SCHAEFER, Wolfgang (Institute of Nuclear Physics PAN, Krakow)

Orateur: SCHAEFER, Wolfgang (Institute of Nuclear Physics PAN, Krakow)

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