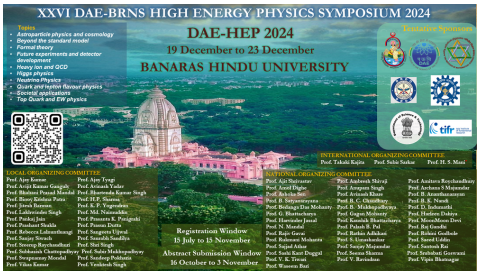

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Probing a new regime of ultra-dense gluonic matter using high-energy photons with the CMS experiment.

In ultraperipheral collisions (UPCs) involving relativistic heavy ions, the production of heavy-flavor coherent vector mesons through photon-nuclear interactions is a key focus due to its direct sensitivity to the nuclear gluon density. Experimental measurements, however, face a two-way ambiguity as each of the symmetric UPC nuclei can act as both a photon-emitter projectile and a target. This ambiguity hinders the separation of contributions from high- and low-energy photon-nucleus interactions, restricting our ability to probe the extremely small-\(x\) regime where nonlinear QCD effects are anticipated. We will be showing the measurement of coherent J/Ψ photoproduction, addressing the two-way ambiguity by employing a forward neutron tagging technique in UPC PbPb collisions at 5.02 TeV. Overall the study focuses on the dominance of gluons in nuclear matter probed at higher energies.

Field of contribution

Experiment

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