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

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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. The presentation will unveil the measurement of coherent heavy quarkonium photoproduction, addressing the two-way ambiguity by employing a forward neutron tagging technique in UPC PbPb collisions at 5.02 TeV. Overall these studies focus on the dominance of gluons in nuclear matter probed at higher energies.

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