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Observation of impact parameter dependence of $\mu^+\mu^-$ acoplanarity in ultra-peripheral PbPb collisions[1] SHUAI YANG, Rice University, CMS COLLABORATION — Photon-photon interactions have been observed in hadronic heavy-ion collisions at very low transverse momentum (p_T) regions and the measured p_T and azimuthal angular correlations of lepton pairs via $\gamma\gamma$ scattering in hadronic events exhibit significant broadening compared to that from vacuum production in ultra-peripheral events. There is still no consensus on the origin of the observed broadening, which is mainly from p_T hardening of initial scattered photons as impact parameter decreases toward central hadronic collisions or final-state electromagnetic modifications of lepton pairs in presence of a QGP medium. In this talk, the azimuthal angular correlations and mass spectra of $\mu^+\mu^-$ pairs via $\gamma\gamma$ scattering will be presented as a function of forward neutron multiplicity and rapidity in ultra-peripheral PbPb collisions with the CMS experiment. The forward neutron multiplicity dependence of $\gamma\gamma \to \mu^+\mu^-$ production provides key insight to the origin of observed broadening for photon-photon produced lepton pairs in hadronic collisions while rapidity dependence constrains the relative contributions from leading order and high order photon-photon interactions to measured $\mu^+\mu^-$ pairs.

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