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Exclusive photon and lepton production in ultraperipheral PbPb collisions at CMS

Wednesday 16 October 2024 15:00 (15 minutes)

Ultraperipheral (UPC) lead-lead collisions produce very large photon fluxes, allowing for the study of fundamental quantum-mechanical processes and serving as a very good probe for physics beyond the standard model (BSM). In this talk, measurements of the light-by-light scattering (LbL, $\gamma\gamma \to \gamma\gamma$) and the Breit–Wheeler (B–W, $\gamma\gamma \to \mathrm{e}^{+}\mathrm{e}^{-}$) processes are reported in UPC at 5.02 TeV using the 2018 CMS lead-lead data sample of $1.65\ \mathrm{nb}^{-1}$. Limits on the production of axion-like particles coupling to photons are set over the mass range $m_{\mathrm{a}} = 5$–100 GeV, including the most stringent limits in 5–10 GeV. We will also report the latest measurements of the anomalous magnetic moment of the τ lepton using UPC PbPb collisions recorded by the CMS experiment.

Track type

Collider and BSM Physics

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