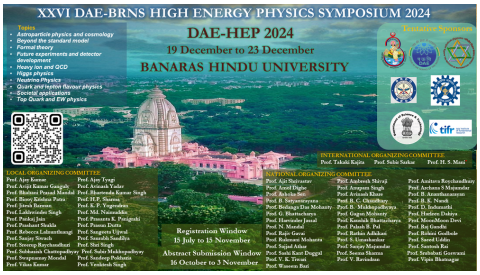

Contribution ID: **69** Type: **Oral**

Measurement of the tau g – 2 factor in the ultraperipheral Pb-Pb collisions recorded by the CMS experiment

Measurements of the anomalous magnetic moment of leptons provide stringent tests of the Standard Model and hints of physics beyond the Standard Model. These measurements for electrons and muons are among the most precisely measured quantities in physics. However, due to the short lifetime of the tau lepton, its anomalous magnetic moment cannot be determined through precession measurements. We will show the latest measurement of the anomalous magnetic moment of the tau lepton based on a data sample of ultraperipheral Pb-Pb collisions with an integrated luminosity of up to 1.7nb^{-1}, depending on the decay channel, collected by the CMS experiment at a center-of-mass energy per nucleon pair of $\sqrt{s_{NN}}$ = 5.02 TeV. The dependence on Z^4 (Z = 82 for lead) enhances the cross-section for photo-production with respect to proton-proton and electron-positron collisions. This measurement is improved with respect to the previous CMS measurement via the addition of three tau-tau decay modes, a factor of four in luminosity, and the incorporation of both cross-section and kinematic distributions in the determination of g − 2. The measured value of the $\gamma\gamma \to \tau\tau$ fiducial cross section is the most precise to date, while the g − 2 measurement is one of the most precise in Pb-Pb and e-e collisions.

Field of contribution

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