Contribution ID: **49** Type: **Oral presentation**

Measurement of the □□ process in Pb+Pb collisions and constraints on the □-lepton anomalous magnetic moment with the ATLAS detector at LHC

Wednesday 31 August 2022 16:00 (30 minutes)

The ATLAS experiment has measured the □-lepton pair production in ultraperipheral lead–lead collisions, Pb+Pb □Pb(□ □ □□□)Pb. From this measurement, constraints on the □-lepton anomalous magnetic moment, □□, have been extracted. The used dataset corresponds to an integrated luminosity of 1.44 nb-1‘ of LHC Pb+Pb collisions at □□NN = 5.02 TeV recorded by the ATLAS experiment in 2018. Selected events contain one muon from a □-lepton decay, an electron or charged-particle track(s) from the other□-lepton decay, little additional central-detector activity, and no forward neutrons. The □□□□ □
process is observed with a significance exceeding 5 standard deviations, assuming the Standard Model value for □□. To measure □□, a template fit to the muon transverse-momentum distribution from □-lepton candidates is performed, using a dimuon (□□ □□□) control sample to constrain systematic uncertainties. The observed 95% confidence-level intervals for □□ are □□ □(-0.058,-0.012) □ (-0.006. 0.025). These limits are compared with previous □□ –measurements obtained at LEP and Belle electron-positron colliders.

Scientific topic

Symmetries and Interactions

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Session Classification: Symmetries and Interactions