

DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 45

Type: **Parallel talk**

BSM physics using photon-photon fusion processes in UPC in Pb+Pb collisions with the ATLAS detector

Thursday, 30 March 2023 15:40 (20 minutes)

Relativistic heavy-ion beams at the LHC are accompanied by a large flux of equivalent photons, leading to multiple photon-induced processes. This talk presents searches for physics beyond the standard model enabled by photon-photon processes in both di-tau and di-photon final states. The tau-pair production measurements can constrain the tau lepton's anomalous magnetic dipole moment ($g-2$), and a recent ATLAS measurement using muonic decays of tau leptons in association with electrons and tracks provides one of the most stringent limits available to date. Similarly, light-by-light scattering proceeds via loop diagrams, which can contain particles not yet directly observed. Thus, high statistics measurements of light-by-light scattering shown in this talk provide a precise and unique opportunity to investigate extensions of the Standard Model, such as the presence of axion-like particles.

Submitted on behalf of a Collaboration?

Yes

Participate in poster competition?

No

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