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Overview of ATLAS heavy-ion program

Monday, 20 March 2023 13:00 (1 hour)

ATLAS is one of the two general purpose experiments operating at LHC. Besides it's main goals, the Higgs boson studies, searches for new physics at energy frontier and precise test of the Standard Model, ATLAS is also perfectly suited for heavy-ion physics. This talk presents an overview of ATLAS measurements in heavy-ion collision systems. These include multiple measurements of jet production and structure, which probe the dynamics of the hot, dense quark-gluon plasma (QGP) formed in relativistic nucleus-nucleus collisions. Another powerful tool to understand the properties of the QGP is the presence of angular correlations that have long been used to study matter created in nucleus-nucleus collisions. Over the last several years such measurements have also been used in proton-proton and proton-nucleus collisions that shows interesting similarities to a QGP behaviour, with
ATLAS group being very active in that area.

Finally, the results from ultra-peripheral collisions (UPCs) where intensive electromagnetic flux surrounding charged ions lead to photon-induced processes when the colliding nuclei have a transverse separation larger than the nuclear diameter, will be discussed.

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