Contribution ID: **44** Type: **Oral Presentation**

ATLAS measurement of azimuthal anisotropies in Z-boson tagged pp collisions at 8 and 13 TeV and in ultra-peripheral Pb+Pb collisions at 5.02 TeV

Tuesday, June 2, 2020 12:00 PM (20 minutes)

Measurements of two-particle correlations in pp collisions have demonstrated long-range azimuthal correlations between charged particle pairs, commonly interpreted as arising from a single particle azimuthal anisotropy. To better understand the origin and nature of these collective signatures, ATLAS presents studies in pp collisions with a novel handle on the event geometry, and in photo-nuclear collisions.
In pp collisions, the impact-parameter dependence of these correlations are studied by selecting events containing a Z-boson, which acts as an independent handle on the impact parameter.
This talk presents measurements of the azimuthal anisotropy in such Z-tagged pp collisions at 8 and 13 TeV. The measurements include studies of the p_T, event-multiplicity, and collision energy dependence of the anisotropy as well as the comparison to the inclusive pp collisions.
In addition, two-particle correlations measured in ultra-peripheral Pb+Pb collisions at 5.02 TeV are also presented. In such ultra-peripheral collisions, the nuclei do not interact hadronically. However, a quasi-real photon from the EM field of one nucleus can interact with the other nucleus. These photons may reach energies up to 80 GeV and readily fluctuate into vector meson configurations. Thus these photo-nuclear collisions may proceed as rho-nucleus collisions albeit at a significantly lower collision energy than the equivalent nucleon-nucleon energy.
This talk presents measurements of two-particle correlations and characterizes the azimuthal distribution of particle production in photo-nuclear collisions as a function of the event multiplicity.

Collaboration (if applicable)

ATLAS

Track

Initial State

Contribution type

Contributed Talk

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Session Classification: Parallel

Track Classification: Initial State