



Contribution ID: 118

Type: **not specified**

Measurements of the substructure dependence of jet quenching in PbPb collisions

Thursday, 3 August 2023 09:00 (20 minutes)

Measuring the jet substructure in heavy-ion collisions provides exciting new opportunities to study detailed aspects of the dynamics of jet quenching in the hot and dense QCD medium created in these collisions. In this talk, we present new comprehensive ATLAS measurements of jet suppression and substructure performed using various jet radii and grooming techniques. We will present new results of the jet substructure, which use Soft-Drop grooming procedure to identify the hardest parton splitting in the jet. The measurements are performed using different jet constituents such as charged tracks, smaller R calorimeter jets, and novel objects reconstructed using tracker and calorimeter information. The jet suppression is characterized using RAA and presented as a function of its transverse momentum (p_T), the angle of the hardest splitting (r_g), and the corresponding transverse momentum scale ($\sqrt{d_{12}}$). These new measurements, along with theory comparisons, will elucidate the mechanisms of jet suppression, medium effects, and energy recovery in the QCD medium.

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Session Classification: Groomed measurements