Contribution ID: **769** Type: **Poster**

A modular perspective to the jet quenching from a small to large radius in very high transverse momentum jets

Tuesday 5 September 2023 17:30 (2h 10m)

In this contribution, we extend the scope of the JETSCAPE framework to cover the jet radius (R) dependence of the jet nuclear modification factor, R_{AA}, for broader area jet cones, going all the way up to R = 1.0. The primary focus of this work has been the in-depth analysis of the high-p_T inclusive jets and the quenching effects observed in the quark-gluon plasma formed in the Pb-Pb collisions at $\sqrt{s_{NN}}$= 5.02 TeV for the most-central (0-10%) collisions. The nuclear modification factor is calculated for inclusive jets to compare with the experimental data from the ATLAS and CMS detectors in the jet transverse momentum (p_T) ranging from 100 GeV up to 1 TeV. The results predicted by the JETSCAPE are consistent in the high p_T range as well as for extreme jet cone sizes within 10-20\%. We also calculate the double ratio ($R^{\mathrm{R}}_{\mathrm{AA}}/R^{\mathrm{R=small}}_{\mathrm{AA}}$) as a function of jet radius and jet-p_T, where the observations are well described by the JETSCAPE framework which is based on the hydrodynamic multi-stage evolution of the parton shower. The calculations are then performed for low-virtuality-based evolution models like the MARTINI and the AdS/CFT, followed by a rigorous comparison between the former model's predictions and the CMS experiment's measurements.

Category

Theory

Collaboration (if applicable)

Past member of ATLAS and ALICE collaborations

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Session Classification: Poster Session

Track Classification: Jets