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Typ: Talk

Exploring the QCD color charge dependence of jet quenching with photon+jet events in ATLAS

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As high-energy light quarks and gluons traverse the Quark-Gluon Plasma, they are expected to lose energy mainly via medium-induced gluon bremsstrahlung. Thus, a basic assumption in pQCD-based frameworks of radiative energy loss is that it depends on the QCD color factor of the initiating parton. In this talk, ATLAS presents two measurements in Pb+Pb collisions aimed at constraining the magnitude of this color-charge dependence. First, ATLAS presents the finalized result on the nuclear modification factor RAA for photon-tagged jets. By comparing this measurement to the RAA for inclusive jets, one can exploit the known difference in the quark-/gluon-initiated jet fraction between these two samples and extract the QCD color-charge dependence. Second, ATLAS presents a new measurement of photon plus two jet production in Pb+Pb collisions. In these events, the two jets traverse the same QGP medium, but typically have different color charges (i.e. they are a quark and a gluon). Thus, measurements such as the total jet-to-photon p_T ratio, the two-jet p_T asymmetry, and the jet opening angle can provide interesting information on the parton-QGP interaction. Both results are compared to a variety of theoretical calculations.

Experiment/Theory

ATLAS

Affiliation

ATLAS Collaboration

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Sitzung Einordnung: Parallel: Jets and their modification in QCD Matter

Track Klassifizierung: Jets and their modification in QCD matter