

# 11th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Beitrag ID: 139

Typ: Talk

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

Mittwoch, 29. März 2023 09:00 (20 Minuten)

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

**Hauptautor:** MCGINN, Christopher (University Colorado Boulder, ATLAS and sPHENIX)

**Vortragende(r):** MCGINN, Christopher (University Colorado Boulder, ATLAS and sPHENIX)

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

**Track Klassifizierung:** Jets and their modification in QCD matter