



Contribution ID: 949

Type: Poster

## Constraining the color-charge dependence of parton-medium interactions with new photon-tagged jet measurements in ATLAS

Wednesday, 6 April 2022 18:34 (4 minutes)

Quarks and gluons traversing a QCD medium may lose energy through a variety of processes, including medium-induced radiation sensitive to their QCD color factor.

The color-charge dependence of the parton-medium interaction is a critical component in all jet energy loss models and generally in heavy-ion physics phenomenology. In this talk, the color charge dependence of jet-medium interactions is quantitatively studied

with a new measurement that compares the nuclear modification factor for photon-tagged jets to that for inclusive jets. These measurements exploit the known difference in the fraction of quark-/gluon-initiated jets with and without the photon tag, allowing for a precise extraction of the color-charge sensitivity. Additionally, the possible impact of the color charge factor on

jet-medium interactions is studied in photon-tagged multi-jet systems where the most likely configuration of jets is one quark and one gluon initiated. Comparisons with state-of-the-art theoretical models are shown.

**Primary author:** ATLAS COLLABORATION

**Presenter:** GO, Yeonju (University of Colorado Boulder (US))

**Session Classification:** Poster Session 2 T04\_2

**Track Classification:** Jets, high- $p_T$  hadrons, and medium response