



Contribution ID: 55

Type: **not specified**

## ATLAS quark/gluon tagging

*Tuesday, July 18, 2017 5:00 PM (20 minutes)*

Distinguishing quark-initiated from gluon-initiated jets is useful for many measurements and searches at the LHC. We present a quark-initiated versus gluon-initiated jet tagger from the ATLAS experiment using the number of reconstructed charged particles inside the jet. The measurement of the charged-particle multiplicity inside jets from Run 1 is used to derive uncertainties on the tagger performance for Run 2. With an efficiency of 60% to select quark-initiated jets, the efficiency to select gluon-initiated jets is between 10 and 20% across a wide range in jet  $p_T$  up to 1.5 TeV with about an absolute 5% systematic uncertainty on the efficiencies. In addition, we also present preliminary studies on a tagger for the ATLAS experiment using the full radiation pattern inside a jet processed as images in deep neural network classifiers.

**Presenter:** RUBBO, Francesco (SLAC National Accelerator Laboratory (US))

**Session Classification:** Algorithms