



Contribution ID: 21

Type: **not specified**

Quark and Gluon Jet Response from Dijet and Z/Gamma + Jet Events at ATLAS.

Friday, 18 February 2022 14:00 (12 minutes)

The most commonly produced objects in the ATLAS detector are jets, streams of particles spreading out from the proton-proton collision point. Jets develop from the constituent quarks and gluons of the protons. These particles carry color charge, and as such cannot exist freely under QCD confinement, and a chain reaction of quark/gluon production begins. Eventually, the quarks and gluons combine, forming hadrons. The ATLAS calorimeters measure much, but not all, of the energy of these jets. The measured fraction is known as the jet response, and jets initiated by quarks have a different response than those initiated by gluons. Here we seek to study the different responses by analyzing dijet, Z+jet and photon+jet events. While the photon and Z boson events can already be well analyzed by the missing energy projection fraction (MPF) calibration technique thanks to the well-defined reference objects (a single Z or photon), the dijet events must be handled differently. A study of jet characteristics allows the energy of one jet in certain dijet events to be corrected, and it may then be used as a reference for the other in MPF. Finally, quark and gluon jet responses can be extracted using the particle fractions in the three event types.

email address

atb3@sfu.ca

Please select: Experiment or Theory

Experiment

Primary author: BUNKA, Alex (Simon Fraser University)

Presenter: BUNKA, Alex (Simon Fraser University)

Session Classification: Particle Physics