Contribution ID: **120** Type: **Talk in Parallel Session at DIS2013**

Studies of jet shapes and substructure with ATLAS

Tuesday 23 April 2013 11:20 (20 minutes)

The internal structure of jets produced in proton-proton collisions at 7 TeV centre-of-mass energy provides a direct test of QCD calculations of gluon and quark radiation, as well as having sensitivity to hadronisation and underlying event. The transverse energy distribution around the jet core has been measured, as well as the fragmentation of a jet into charged particles. Jet shapes - including the jet mass - and jet substructure have the potential to identify jets coming from massive, boosted particles decaying hadronically. Techniques have also been developed for reducing the sensitivity of jet physics to soft QCD and to multiple proton-proton collisions. A selection of such variables is also measured and compared to a range QCD calculations and phenomenological models.

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Session Classification: WG4: QCD and HFS

Track Classification: QCD and Hadronic Final States