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Studies of jet shapes and substructure with ATLAS

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The internal structure of jets produced at the LHC is important both as a direct test of perturbative QCD and as a tool to identify boosted electroweakscale objects decaying to hadrons. The transverse energy distribution around the jet core has been measured, as well as the fragmentation of a jet into charged particles. Jet shapes, singlejet masses, and jet substructure have the potential to identify jets coming from massive, boosted particles decaying hadronically, such as vector bosons. Techniques have also been developed for reducing the sensitivity of jet physics to soft QCD and to multiple protonproton collisions. A selection of such variables is measured and compared to a range of QCD calculations and phenomenological models.

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