

Research project

Author: Filip Breuer

Date: August 2024

Jet Production in Quantum Chromodynamics

In quantum chromodynamics, the contents of particles can be studied through properties of jets. A jet algorithm is used to cluster particles into jets. In this paper we have generated data for several sets of parton distribution functions (PDFs) and certain parameter variations using the MC generator Pythia. We then clustered the data into jets with FastJet to examine jet differential cross sections and compare them for several PDFs. With a new collider on the way at CERN, we investigate how the MC generator Pythia handles the 100 TeV the centre of mass energy and how this changes the differential cross sections.