High Energy Physics - Experiment

Inclusive-jet cross sections in NC DIS at HERA and a comparison of the kT, anti-kT and SIScone jet algorithms

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For the first time, differential inclusive-jet cross sections have been measured in neutral current deep inelastic ep scattering using the anti-kT and SIScone algorithms. The measurements were made for boson virtualities Q^2 > 125 GeV^2 with the ZEUS detector at HERA using an integrated luminosity of 82 pb^-1 and the jets were identified in the Breit frame. The performance and suitability of the jet algorithms for their use in hadron-like reactions were investigated by comparing the measurements to those performed with the kT algorithm. Next-to-leading-order QCD calculations give a good description of the measurements. Measurements of the ratios of cross sections using different jet algorithms are also presented; the measured ratios are well described by calculations including up to O(alphas^3) terms. Values of alphas(Mz) were extracted from the data; the results are compatible with and have similar precision to the value extracted from the kT analysis.

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