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Thrust Jet Analysis of Deep–Inelastic Large Rapidity Gap Events at HERA

H1 Collaboration

Large rapidity gap events in deep–inelastic ep collisions, observed with the H1 detector at HERA, have been subjected to a thrust jet analysis. The analysis is based on the 1994 data and corresponds to an integrated luminosity of $1.96\,\mathrm{pb}^{-1}$. The average thrust of events from virtual photon ($10 < Q^2 < 100$ GeV^2) dissociation is analysed in intervals of the hadronic mass M_X which range from 6 to 36 GeV^2, and the dependences on Q^2 and P_t^2 (the thrust jet transverse momentum) are investigated. The average thrust in large rapidity gap events is found to be smaller than that observed in e^+e^- data when the two are compared at $M_X = \sqrt{s_{e^+e^-}}$. The P_t^2 distributions of the thrust jets, covering the interval $[0 - 140]$ GeV^2, show a peak at $P_t^2 < 1$ GeV^2 i.e. jet-alignment with the $\gamma^* p$ collision axis, and a substantial high P_t tail. The P_t^2 distributions show no dependence on M_X. However, as expected, when P_t grows thrust gets smaller. The number and properties of large P_t events cannot be explained in terms of the $q\bar{q}$ Aligned Jet Model for diffractive deep-inelastic scattering. At the parton level a large fraction of $q\bar{q}g$ configurations is needed to account for the results.