May 25th 1996
Abstract pa02-068 submitted to the 28th International Conference on High Energy Physics ICHEP'96, Warsaw, Poland, July 1996

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

H1 Collaboration

Abstract

A thrust jet analysis of deep–inelastic ep events with a large rapidity gap at HERA is presented using data taken during 1994 with the H1 detector, corresponding to an integrated ep luminosity of $\sim 2\,\mathrm{pb}^{-1}$. The average thrust values grow with the mass M_X, thus providing evidence for a basic 2-jet structure as the salient topological property of the produced hadronic system X. The distributions in p_T^2 of the thrust jets, ranging from 0 to $140\,\mathrm{GeV}^2$, are presented in intervals of M_X, from 6 to $36\,\mathrm{GeV}$. They show jet alignment which is dominantly along the $\gamma^* p$ collision axis, but also a substantial tail at high transverse momentum p_T, with 38 (64)% events at $p_T^2 > 3.0\,(1.0)\,\mathrm{GeV}^2$. Further, these distributions in p_T^2 of the thrust jets are approximately independent of M_X except for values of p_T^2 close to the kinematic limit. The average thrust values are smaller than those observed in e^+e^- annihilation, indicating that higher order perturbative QCD configurations may be more important in γ^* diffractive dissociation than in e^+e^- annihilation into a system of hadrons of given mass M_X. The Aligned Jet Model for diffractive deep–inelastic scattering without hard gluon radiation, implemented in terms of electron-pomeron ($e\mathbb{P}$) scattering with quarks only in the parton density function, fails to describe the data. A comparison with the experimental results of a Monte Carlo simulation, in which the parton density functions for diffractive exchange are taken from a QCD analysis of the diffractive structure function $F_2^{D(3)}$, is presented.

Plenary Sessions:
2. Soft Interactions and diffraction Phenomena - S. Levonian
4. QCD and Low x Physics - H. Abramowicz, R. Brock
Parallel Session: I Strong Interaction Physics
2. Soft Interactions
3. Structure Functions and Low x Physics
4. Hard Processes and Perturbative QCD