

High Energy Physics - Experiment

Scaled momentum spectra in deep inelastic scattering at HERA

[ZEUS Collaboration](#)*(Submitted on 22 Jan 2010 (v1), last revised 29 Jan 2010 (this version, v2))*

Charged particle production has been studied in neutral current deep inelastic ep scattering with the ZEUS detector at HERA using an integrated luminosity of 0.44 fb^{-1} . Distributions of scaled momenta in the Breit frame are presented for particles in the current fragmentation region. The evolution of these spectra with the photon virtuality, Q^2 , is described in the kinematic region $10 < Q^2 < 41000 \text{ GeV}^2$. Next-to-leading-order and modified leading-log-approximation QCD calculations as well as predictions from Monte Carlo models are compared to the data. The results are also compared to $e+e^-$ annihilation data. The dependences of the pseudorapidity distribution of the particles on Q^2 and on the energy in the γp system, W , are presented and interpreted in the context of the hypothesis of limiting fragmentation.

Comments: 44 pages, 11 figures, 21 tables

Subjects: **High Energy Physics - Experiment (hep-ex)**

Report number: DESY-09-229

Cite as: [arXiv:1001.4026v2](#) [hep-ex]

Submission history

From: Teresa Tymieniecka [[view email](#)][\[v1\]](#) Fri, 22 Jan 2010 15:37:31 GMT (259kb)[\[v2\]](#) Fri, 29 Jan 2010 15:29:36 GMT (265kb)*[Which authors of this paper are endorsers?](#)*

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