Leading Baryon Production at HERA

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Abstract

A significant fraction of e^+p scattering events produced at HERA contain a leading baryon which carries a substantial proportion of the energy of the incoming proton. A brief summary of published and preliminary results on leading baryon production produced by the H1 and ZEUS Collaborations are presented. The report gives details of recent preliminary measurements.

The semi-inclusive differential cross sections $d\sigma_{ep\to eXp}/dx_L$ and $d\sigma_{ep\to eXp}/dp_T^2$ are presented as a function of x_L and p_T^2, where x_L is the fraction of the proton-beam momentum carried by the leading baryon and its p_T^2 transverse momentum squared. Studies performed with events containing a di-jet system and a leading neutron are discussed in terms of the One-Pion-Exchange picture. High x_L leading neutron data are used to identify the Pion trajectory and results on the slope of the Pion trajectory are reported. Measurements concerning the validity of vertex factorization are presented.