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Elastic Production of J/ψ Mesons at High Q^2 and in Photoproduction at HERA

H1 Collaboration

The elastic production of J/ψ mesons, i.e. the reaction $e\,p \to e J/\psi\,p$ has been studied with the H1 detector in two regions of Q^2, the virtuality of the exchanged photon. Data are presented for $Q^2 \sim 0$ GeV^2 (photoproduction) and for $Q^2 > 2$ GeV^2. The J/ψ is identified via its decay to lepton pairs. New results are given for the cross-section as a function of Q^2 and as a function of $W_{\gamma p}$, the centre-of-mass energy of the virtual photon–proton collision. The dependence of the differential cross-section on the square of the momentum transfer from the proton t, has been measured, and for photoproduction the decay angle distributions of the J/ψ.