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Exclusive $\rho(770)$ photoproduction at HERA

Exclusive photoproduction of $\rho(770)$ vector mesons is studied using the H1 detector at HERA. A sample of about 700000 decays $\rho \rightarrow \pi^+\pi^-$ was collected in the years 2006-2007, using the H1 fast track trigger. It corresponds to an integrated luminosity of 1.3 pb^{-1} . The sample is used to study cross-sections as a function of the invariant mass $m_{\pi\pi}$ of the decay pions, the photon-proton collision energy W and the momentum transfer at the proton vertex t . The phase-space restrictions are $0.5 < m_{\pi\pi} < 1.3 \text{ GeV}$, $20 < W < 80 \text{ GeV}$ and $|t| < 1.5 \text{ GeV}^2$. Reactions where the proton stays intact are statistically separated from those where the proton dissociates to a low-mass hadronic system. The observed cross-section dependencies are parameterized using fits and are compared to expectations from phenomenological models.

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Track Classification: Diffraction in e-p and e-A collisions