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Measurement of the cross-section ratio sigma(psi(2S))/sigma(J/psi(1S)) in deep inelastic exclusive ep scattering at HERA

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The exclusive deep inelastic electroproduction of psi(2S) and J/\psi(1S) at an ep centre-of-mass energy of 317 GeV has been studied with the ZEUS detector at HERA in the kinematic range 2 < Q2 < 80 GeV2, 30 < W < 210 GeV and |t| < 1 GeV2, where Q2 is the photon virtuality, W is the photon–proton centre-of-mass energy and t is the squared four-momentum transfer at the proton vertex. The data for 2 < Q2 < 5 GeV2 were taken in the HERA I running period and correspond to an integrated luminosity of 114 pb-1. The data for 5 < Q2 < 80 GeV2 are from both HERA I and HERA II periods and correspond to an integrated luminosity of 114 pb-1. The data for 5 < Q2 < 80 GeV2 are from both HERA I and HERA II periods and correspond to an integrated luminosity of 468 pb-1. The decay modes analysed were mu+ mu- and J/psi(1S) pi+ pi- for the psi(2S) and mu+ mu- for the J/psi(1S). The cross-section ratio sigma(psi(2S))/sigma(J/psi(1S)) has been measured as a function of Q2, W, and t. The results are compared to predictions of QCD-inspired models of exclusive vector-meson production.

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