Contribution ID: **196** Type: **not specified**

Combined Variables in Isolated Photon Production in Deep Inelastic Scattering at HERA

Tuesday, 4 April 2017 16:20 (15 minutes)

Isolated photons with high transverse energy have been studied in ep scattering with the ZEUS detector at HERA, using and integrated luminosity of 326 pb^{-1}. The kinematic region includes photon virtualities $10 < Q^2 < 350$ GeV^2. Photons with transverse energy $4 < E_T^\gamma < 15$ GeV and pseudorapidity $-0.7 < \eta^\gamma < 0.9$ were measured with accompanying jets having transverse energy and pseudorapidity $2.5 < E_T^{\rm jet} < 35$ GeV and $-1.5 < \eta^{\rm jet} < 1.8$. Differential cross sections are presented for several different correlated variables: the fraction of the incoming photon energy and momentum that is transferred to the photon and the jet, the fraction of proton energy taken by the parton that interacts with the photon, and the azimuthal angle and the pseudorapidity difference between the prompt photon and the jet and between the prompt photon and the scattered electron. Comparisons with different theoretical calculations are made.

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Session Classification: WG4 Hadronic and Electroweak Observables

Track Classification: WG4) Hadronic and Electroweak Observables