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Observation of Events with an Isolated High Energy Lepton and Missing Transverse Momentum at HERA

H1 Collaboration, DESY

A search for events with an imbalance in transverse momentum and with isolated high energy leptons has been carried out at the positron-proton collider HERA. One event with an e^- and five events with a $\mu^\pm$ are found together with evidence for undetected particles carrying transverse momentum. Within the Standard Model the dominant origin of events with this kind of topology is the production of W bosons with subsequent leptonic decay. Three of the six events are within measurement errors found in a region of phase space likely to be populated by this process, while the remaining events show kinematic properties which are atypical of all Standard Model processes considered.