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Measurements of differential cross sections for W+jets and for multijet production and determination of the strong coupling constant in ppbar collisions at sqrt(s)=1.96 TeV

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We present two sets of measurements based on data collected with the D0 detector at the Fermilab Tevatron collider running at sqrt(s)=1.96 TeV. First we present a comprehensive study of the differential cross sections for the production of W bosons in association with up to four hadronic jets. Results are compared with the latest NLO and resummation theoretical predictions as well as with models implemented in event generators. We then present measurements of differential cross sections sensitive to multijet production, which are then interpreted in the framework of QCD to determine the evolution of the strong coupling constant in the energy range between 200 and 450 GeV, which has not been investigate yet in these type of studies.

Author: Prof. STRAUSS, Michael (University of Oklahoma (US))

Presenter: Prof. STRAUSS, Michael (University of Oklahoma (US))

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