Measurements of the prompt single $J/\psi$ and double $J/\psi$ production cross section at the Tevatron

ROBERT HIROSKY, University of Virginia, D0 COLLABORATION — We present measurements of the production cross section of prompt $J/\psi$ mesons, as well as the cross section of simultaneous production of two prompt $J/\psi$ mesons, in proton-antiproton collisions at $\sqrt{s} = 1.96$ TeV using 8.1 fb$^{-1}$ of Tevatron data collected by the D0 experiment. The latter cross section is separated into contributions due to single parton and double parton scatterings. The $J/\psi$ mesons are fully reconstructed in the muonic final states. Using these measurements, the effective cross section, a parameter characterizing an effective spatial area of parton-parton interaction and tightly related to the parton spatial density inside the nucleon, is also measured.

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