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**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  $8.1 \text{ fb}^{-1}$  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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