First observation and studies of the simultaneous production of $J/\psi$ and $\Upsilon$ at the Tevatron

OLGA GOGOTA$^1$, Kiev National University, Ukraine, DZERO COLLABORATION — We present the first observation of the simultaneous production of $J/\psi$ and $\Upsilon$ mesons with the D0 detector at Fermilab in $p\bar{p}$ collisions at $\sqrt{s} = 1.96$ TeV. The production cross section for both singly and simultaneously produced mesons is measured using a sample with an integrated luminosity of 8.1 fb$^{-1}$. The simultaneous production cross section is separated into contributions due to single- and double-parton scatterings. Using these measurements, we determine the effective cross section $\sigma_{\text{eff}}$, a parameter characterizing an effective spatial area of the parton interactions and related to the parton spatial density inside the nucleon.

$^1$Presenting on behalf of the D0 Collaboration

Rick Van Kooten
Indiana University

Date submitted: 08 Jan 2015