Determining the uncertainty on the charm cross section and the effect on the J/ψ cross section[1] RANDY NELSON, RAMONA VOGT, Lawrence Livermore Nat Lab and University of California Davis, ANTHONY FRAWLEY, Florida State University — Theoretical estimates of charm production cross sections are strongly dependent on the mass and scale choices. The particular choice defining the "central value" and the limits on the mass and scale parameters are of crucial importance in comparing calculations to the experimental data. Previous Fixed Order Next-to-Leading-Log (FONLL) calculations have used a standard fiducial set of parameters. Here we explore the available parameter space in charm quark mass, renormalization and factorization scales that give reasonable fits to the total charm cross section at next-to-leading order in perturbative QCD to make a revised estimate of its uncertainty. We study the effect of the parameter choices on the charm differential cross sections, extrapolated to LHC energies, as well as the effect of these parameter choices on the J/ψ production cross section calculated in the color evaporation model.

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