

Double parton scattering in proton-nucleus and nucleus-nucleus collisions at the LHC

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Multi-parton scatterings are extremely enhanced in interactions involving nuclei at colliders, compared to proton-proton collisions at the same energy. We present the derivation of a simple generic expression to compute double-parton scattering (DPS) cross sections in high-energy proton-nucleus and nucleus-nucleus collisions as a function of the corresponding single-parton hard cross sections and of the event centrality. We apply such DPS formalism to two different final-states at CERN LHC energies: (i) same-sign W-boson pair production in p-Pb [1], and (ii) double-J/psi production in Pb-Pb [2], using NLO predictions with nuclear PDF modifications for the corresponding single-parton scatterings. The first process can help determine the effective σ_{eff} parameter characterising the transverse distribution of partons in the nucleon. The second process provides interesting insights on the event-by-event enhancements and/or suppressions observed in prompt-J/psi production in Pb-Pb collisions at the LHC. Both processes are experimentally measurable and the expected event rates, after acceptance and efficiency losses, for the signal and backgrounds will be discussed.

[1] D. d'Enterria and A.M. Snigirev, Phys.Lett. B718 (2013) 1395; arXiv:1211.0197.

[2] D. d'Enterria and A.M. Snigirev, arXiv:1301.5845.

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