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Integral and differential cross sections of muon pair-production in pp collisions at the LHC

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The integral cross sections and the transverse momentum distributions for the Z/γ* boson and light jet production in proton-proton collisions are calculated at energy 13 TeV. The hard processes with n = 0,1,2, and 3 outgoing partons are generated by MadGraph5_aMC@NLO at next-to-leading order of perturbative QCD. The parton events are re-weighted to determine uncertainties of the observables originating from the parton distributions and due to variations of renormalization and factorization scales. Parton showers are simulated within Pythia 8, matching and merging are provided by MLM and FxFx methods. Deviations of the computed integral cross sections from the recent results of ATLAS, CMS, and LHCb measurements are less than 4, 3, and 2%.

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