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Sensitivity studies of color reconnection in top UE measurements

Sensitivities studies of color reconnection (CR) effects in $t\bar{t}$ underlying events in proton-proton collision at the LHC were performed for the fully leptonic and fully hadronic final states (FLFS and FHFS respectively) events. Effects of CR parameters were studied. Differences between predictions with and without CR were observed of $\sim 8 - 15\%$ for the investigated observables, charged particle multiplicity, charged particle average transverse momentum and transverse momentum sum. For different color reconnection models, effects around 5% were observed. No differences for predictions with and without CR between FLFS and FHFS were found for all the observables. This study shows the sensitivity of the UE observables to CR effects and may help to lower the uncertainties due to the UE simulation in top mass measurements.

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