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Measurement of Underlying Events using Drell-Yan Process

A measurement of underlying events (UE) using Drell-Yan (DY) process around Z-resonance, is performed in proton-proton collision at centre of mass energy $\sqrt{s}$ = 7 TeV using data collected by CMS experiment at the LHC during the year 2010 and corresponding to an integrated luminosity of 36 pb^{-1}. %Experimentally, it is difficult to separate hard and soft components in most of the collisions in a clean way. The DY process with muonic final state ($q\bar{q} \rightarrow \mu\mu$) provides an excellent way to study UE activity by easily separating out the hard interaction part from the soft components. The physics observables which are sensitive to the UE, the densities of average multiplicity and the average scalar sum of the transverse momenta of the charged particles in the directions opposite and transverse to the dimuon system have been studied. A slow growth in these variables are observed with increase in energy scale of the event defined by the transverse momentum of the di-muon system. The data is corrected to the particle level to remove the effects of the detector resolution and then compared with the predicition of various current parametrizations in QCD Monte-Carlo.

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