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Forward-backward multiplicity correlations in pp collisions at $\sqrt{s} = 0.9, 2.76$ and 7 TeV

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Forward-backward multiplicity correlations have been measured with the ALICE detector at the LHC in pp minimum bias collisions at $\sqrt{s} = 0.9, 2.76$ and 7 TeV. The measurement is performed in the central pseudorapidity region ($|\eta| < 0.8$) for $p_T > 0.3$ GeV/c. The multiplicity correlation strength (b_{CORR}) was obtained using pairs of separate pseudorapidity and azimuthal windows and studied as a function of the separation distance between the windows in η and φ , as well as of the size of the windows. A considerable increase of the correlation strength with the collision energy is found.

Two types of contributions – the short-range (SR) and the long-range (LR) – are observed. The energy dependence of b_{CORR} is found to be weak for the SR component and strong for the LR component. The b_{CORR} is also studied in different transverse momentum intervals, which have the same mean multiplicity. It is found that both SR and LR contributions to b_{CORR} increase with increasing minimum threshold of p_T .

The results are compared to PYTHIA and PHOJET Monte Carlo event generators and to the string-based empirical model.

On behalf of collaboration:

ALICE

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