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Long-range correlations in pp and A-A collisions from ALICE

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The first experimental results on forward-backward (FB) multiplicity correlations in proton-proton collisions have shown considerable long-range effects. These are seen at all three LHC energies (0.9, 2.76 and 7 TeV) and will provide useful input in studying long range correlations in A-A collisions. It is shown that the FB multiplicity correlation measurements, done in ALICE for various configurations of azimuthal sectors, enable separation of the short - and long - range effects. This allows us to determine that the long-range component provides the dominant contribution to the correlation strength in the given case of pp collisions. Results are discussed and compared to PYTHIA and PHOJET MC event generators and to a model based on the string picture of hadronic interactions. All three models indicate that the observed behavior of the correlation strength in azimuth and rapidity is compatible with multi-particle production by independent string emitters. The long-range part arises due to event-by-event fluctuations of the number of emitters while the short-range part is due to pair correlations between particles produced by the same emitter. Theoretical motivations for further search and studies of these correlations in A-A and pp collisions are also discussed briefly including two models: the String Fusion Model (SFM) and the Color Glass Condensate (CGC).

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