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Charged particle correlations and forward proton measurements with ATLAS

Correlations between charged particles provide important insight about hadronization processes. We present recent results on Bose-Einstein two-particle correlation using ATLAS data at the center-of-mass energy of 13 TeV. Also, if available, the analysis of the momentum difference between charged hadrons in pp, p-lead, and lead-lead collisions of various energies is performed in order to study the dynamics of hadron formation. The spectra of correlated hadron chains are explored and compared to the predictions based on the quantized fragmentation of a three dimensional QCD string (helix). In addition, if available, the elastic scattering of protons at 13 TeV is measured in the range of protons transverse momenta allowing the access to the Coulomb-Nuclear-Interference region. The data were collected thanks to dedicated special LHC beta* = 2.5km optics. The total cross section as well as rho-parameter, ratio of the real to imaginary part of the forward elastic scattering amplitude, are measured and compared to various models as well as results from other experiments.

Submitted on behalf of a Collaboration?

Yes

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